



## **Environmental Services**

Specialising in:

Acid Sulphate Soils  
Contaminated Site Assessment  
Air Quality Investigations

Remediation Advice and Design  
Groundwater Management  
Facility Maintenance

**ABN36 835 856 256**

# **Groundwater Monitoring Event #4**

**Lot 20 Adelaide Street  
Hazelmere**

PREPARED FOR:

**Wasterock Pty Ltd**

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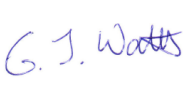


## Environmental Services

### DOCUMENT DETAILS

<b>Title:</b>	Groundwater Monitoring Event #4
<b>Project Address</b>	Lot 20 Adelaide Street, Hazelmere
<b>Client</b>	Wasterock Pty Ltd
<b>Job Number</b>	E2012-031
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<b>Status:</b>	Final v1
<b>Synopsis:</b>	This document and investigation has been prepared in accordance with the Contaminated Sites Act, Western Australia (2006) and Department of Environment and Conservation (DEC) Contaminated Sites Management Series guidelines. The Scope of Works lists the extent of the investigation undertaken.

### DOCUMENT DISTRIBUTION

Version No	Written by Date	Reviewed by Date	Issued by Date	Distributed to	Copies
Final v1	Rhian Burnell 24/06/13	Greg Watts 13/06/2013	Greg Watts 13/06/13	Hazelland Pty Ltd	Email & Hard Copy
Signed					

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# 1 INTRODUCTION

This report has been prepared to detail the sampling methodology and results from Groundwater Monitoring Event #4 (GME) completed at the Hazelland Landfill in Hazelmere, herein referred to as the Site. MDW Environmental Services (MDWES) were commissioned by Wasterock Pty Ltd to complete groundwater investigations and compile a Groundwater Investigation Report in support of Section 3.7 of the *Site Remediation Works Agreement and Site Management Plan*.

## 2 SCOPE OF WORK

The Scope of Work for this project is as follows:

- Collect and analyse representative samples from six groundwater monitoring wells. Samples will be analysed by a NATA accredited laboratory for:
  - Total Petroleum Hydrocarbon / Total Recoverable Hydrocarbon (TPH/TRH);
  - Monocyclic Aromatic Hydrocarbons (MAH);
  - Polynuclear Aromatic Hydrocarbons (PAH);
  - Benzene, Toluene, Ethyl Benzene and Xylene (BTEX);
  - Phenolic Compounds;
  - Dissolved and Total Metalloids (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn); and
  - Organochlorine and Organophosphorous Pesticides (OC/OP).
- Data interpretation and reporting.

### 2.1 Objectives

The technical objectives of the investigation are to:

- Update the directional flow of the groundwater below the site;
- Identify and determine the extent of the risk that any identified contamination may pose to human health and the environment;
- Establish groundwater data from the Site prior to the proposed remediation works;
- Determine the suitability of water abstraction from the superficial aquifer for the purposes of dust suppression and compaction.

### 3 SITE IDENTIFICATION

Information regarding the Site identification is presented in Table A below.

**Table A:** Site Summary Form

<b>Site Location:</b>	Lot 20 Adelaide Street, Hazelmere
<b>Current Site Use:</b>	Industrial
<b>Total Site Area:</b>	2054 m <sup>2</sup>
<b>Folio:</b>	299
<b>Certificates of Title:</b>	20/D76128 (Appendix A)
<b>Local Council:</b>	City of Swan

The Site is bound by the coordinates as shown in Table B.

**Table B:** Site UTM coordinates

BOUNDARY CORNERS	MGA94 Zone 50	
	Easting (E)	Northing (N)
North west corner	406595	6467321
North east corner	407034	6467190
North east corner (mid)	406939	6467172
South east corner	407015	6466812
South west corner	406476	6467046
Eastern Corner	407078	6467020

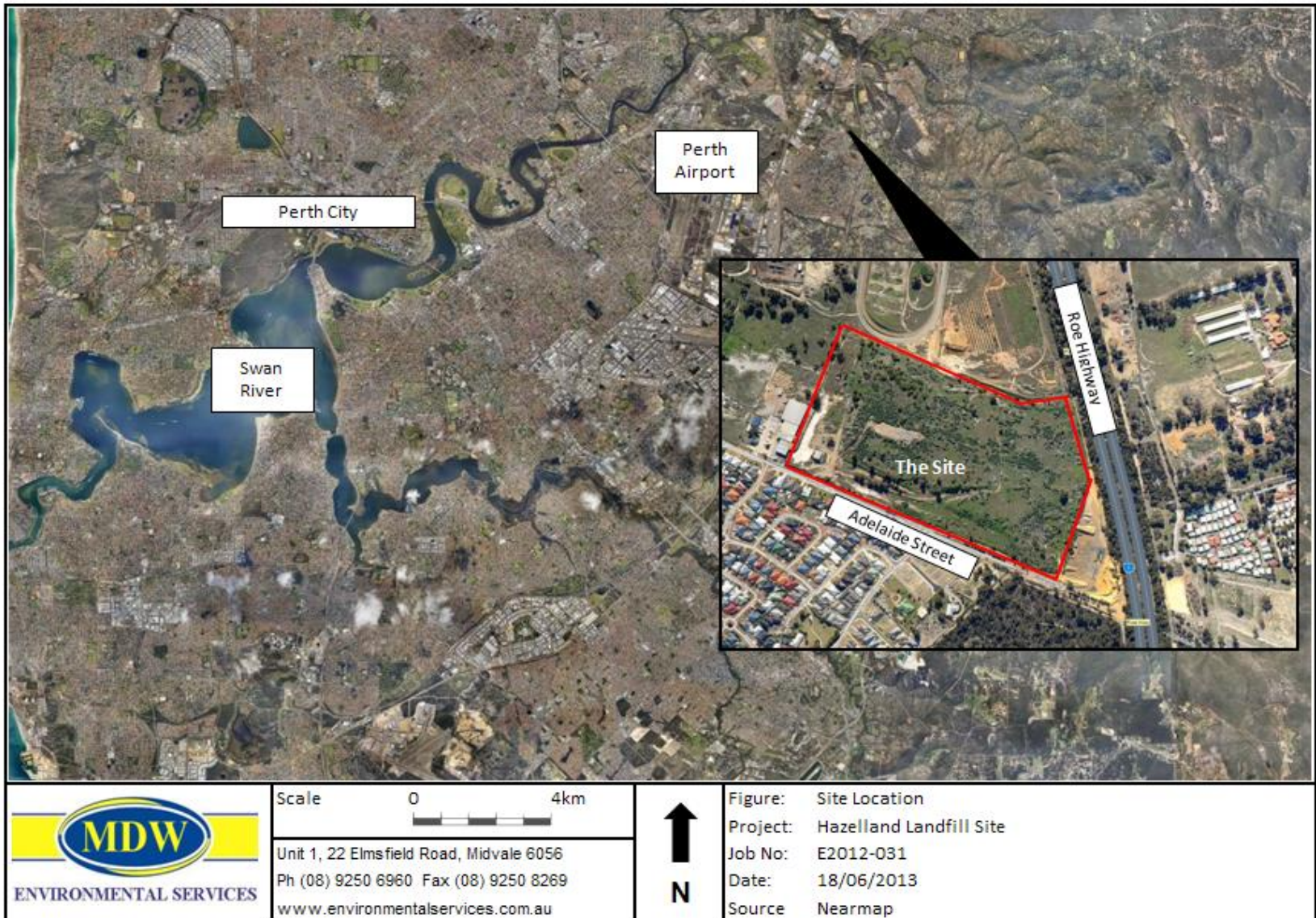


Figure 1 Site Location Map



## **4 BACKGROUND INFORMATION**

The Site (Figure 1) is located within the City of Swan, approximately 14 km east north east of Perth CBD. Situated between Talbot Road and Adelaide Street access is gained from the south of the Site off Adelaide Street. Historically the Site was occupied and used as a licenced inert waste landfill in which potentially contaminating wastes were dumped. Following investigation by Parsons Brinckerhoff (2006) the Site was classified “Contaminated – Remediation Required” by the Department of Environment and Conservation (DEC). The Parsons Brinckerhoff report contains substantial amounts of background information regarding this property and the Groundwater Investigation Report should be read in conjunction with this previously completed soil investigation.

### **4.1 Site History**

A detailed historical investigation was not completed as part of this Groundwater Monitoring Event.

### **4.2 Land Owner**

The Site is currently vested with Hazelland Pty Ltd and has been so since 2006, under the Land Title City of Swan, Location: Lot 20, Volume: 2054, Folio: 299. A copy of the Certificate of Title is attached in Appendix A.

### **4.3 Land Use**

The Site has been used for collection and storage of inert demolition waste as landfill with some potentially contaminating waste.

### **4.4 Site Boundary**

The Site is surrounded by private land to the north and south with industrial properties to the west and Roe Highway runs along the eastern boundary.

### **4.5 Groundwater Use**

The site does not currently make use of groundwater.

### **4.6 Previous Studies**

Soil investigations were completed on Site during 1992 (Dames and Moore) and 2006 (Parsons Brinckerhoff).

### **4.7 Contaminated Sites Database**

The site is currently classified as “*Contaminated – Remediation Required*” as per DEC Contaminated Sites Database.



Figure 2 Monitoring Well Locations

## **5 POTENTIAL CONTAMINANTS OF CONCERN (PCOC)**

The land is proposed for development into industrial lots. The following list of Potential Contaminants of Concern (PCOC) is based on the proposed use, historical and current Site activities, regional soil and related issues, proximity to classified contaminated sites and off-site sources of impacts:

- Dissolved and Total Metalloids: Arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), manganese (Mn), molybdenum (Mo), nickel (Ni), silver (Ag), selenium (Se), vanadium (V), zinc (Zn), and mercury (Hg);
- Benzene, Toluene, Ethyl Benzene, Xylene (BTEX);
- Polynuclear Aromatic Hydrocarbons (PAH);
- Monocyclic Aromatic Hydrocarbons (MAH);
- Phenolic compounds;
- Total Petroleum Hydrocarbons / Total Recoverable Hydrocarbons (TPH/TRH);
- Organochlorine and Organophosphorous Pesticides (OC/OP).

### **5.1 Preferential Contaminant Pathways**

Many of the PCOC identified have the potential to impact soil and groundwater at the Site and surrounding areas. Listed above are the contaminants most likely to be found within the fill and most likely to present a risk to human health and the environment. The PCOC have been identified due to the wide range of inert demolition waste likely to have been deposited at the Site. The preferential contaminant pathways can be summarised as soil, air and groundwater; notwithstanding that the Scope of Works for this investigation only includes assessment of potential groundwater contamination.

## 6 SAMPLING ANALYSIS PLAN AND METHODOLOGY

The Monitoring Well (MW) locations (on Site) are shown in Figure 2. The groundwater monitoring field sheets are presented in Appendix B. The groundwater sampling conducted at the Site is summarised in Table C below.

The sampling and analysis of the GME was completed to determine whether imported fill on the site had adversely affected the groundwater. The results within this report will complement previous groundwater data and be used to highlight any changes in groundwater quality during the proposed site remediation works.

**Table C:** Groundwater Investigation Summary

<b>Activity</b>	<b>Details</b>
<b>Date of Field Activity</b>	3 <sup>rd</sup> June 2013
<b>Investigation</b>	A total of five groundwater wells were sampled for continued groundwater monitoring
<b>Sampling Method</b>	Monitoring wells were sampled via use of a 12V GeoTech Low Flow Bladder pump coupled to YSI Quattro low flow sampler
<b>Samples</b>	A total of five water samples were taken (one from each monitoring well)
<b>Calibration</b>	YSI Quattro low flow calibrated
<b>Decontamination Procedure</b>	Gloves were disposed of after each sample taken.
<b>Analysis</b>	<ul style="list-style-type: none"> <li>• Dissolved and Total Metals</li> <li>• Nutrients</li> <li>• Groundwater Parameters</li> <li>• OC/OP</li> <li>• Phenolic Compunds</li> <li>• PAH</li> <li>• TRH/TPH</li> <li>• BTEX</li> </ul>
<b>Laboratory</b>	Samples were sent to the primary laboratory, ALS Environmental. Secondary samples were sent to ARL, both NATA Accredited.
<b>Sample Preservation</b>	Samples were placed in laboratory supplied bottles. Samples were stored on ice (<4°C) in an esky while on site and in transit to the laboratory.

## **7 QUALITY ASSURANCE / QUALITY CONTROL**

The following Quality Assurance / Quality Control (QA/QC) program was implemented throughout the investigation to ensure the accuracy and precision of the data obtained. QC measures the effectiveness of the procedures of the QA program.

### **7.1 Quality Assurance**

All procedures including staff selection, sampling methodologies, equipment, analysis methods and data transfer were based on:

- Australian Standards AS-4482.1-2005 and AS-4482.2-1999: Guides to the Sampling and Investigation of Potentially Contaminated Soil.
- Australian/New Zealand Standard AS/NZS 5667.1:1998 Water Quality-Sampling.

Particularly, the following actions applied:

- Samples were collected by a trained, experienced field technician,
- Samples were collected by the same personnel, ensuring that techniques used were consistent across the sampling program.

### **7.2 Groundwater Sampling Procedure**

All groundwater samples were subject to the following procedures:

- Dedicated tubing was used for each well and the pump and low flow cell were decontaminated between wells;
- Samples were collected into laboratory supplied sample bottles. Preservatives (if required) were provided by the laboratory in the appropriate sample bottle;
- Samples were filled to the top to ensure no headspace remained;
- All samples were marked in the field using permanent marker with a label showing sample location, date and job number;
- Samples were immediately placed on ice within an esky for transport to the laboratory.

Laboratory certificates of analysis including sample receipt notification, chain of custody and laboratory quality control are available in Appendix C.

#### **7.2.1 Decontamination of Sampling Equipment**

All sampling equipment was decontaminated prior to use and between each sample location. Decontamination was completed using the following procedure:

- Equipment washed in water;
- Equipment thoroughly scrubbed in water with Decon90;
- Equipment rinsed in tap water;

- Equipment rinsed in de-ionised water.

### **7.3 Laboratory**

Two NATA certificated laboratories were selected to analyse the samples. ALS Laboratory Group was selected as the primary laboratory. ARL WA; the secondary laboratory, was used for the analysis of replicate samples and for inter-laboratory quality control (QC).

The laboratory conducts internal quality control analysis as part of their QA/QC Procedures. Following discussions with the laboratory and a review of their laboratory certificates of analysis, the following laboratory QC protocols occur:

- At least 10% of samples are split into internal laboratory duplicate samples. These samples are homogenised prior to splitting into sub samples;
- At least 5% of samples are run with Matrix Spikes of known additions;
- Laboratory Control Samples (LCS) are run at the required rate (minimum 1 LCS per batch of samples). The LCS results are reported in the laboratory certificates named 'Interpretive Quality Control Report' and the 'Quality Control Report'.

Chain of Custody forms (CoC), laboratory sample receipt notification (SRN), laboratory certificates of analysis and QC analysis are provided in Appendix C.

Laboratory QC was analysed and outliers are described below:

### **7.4 Laboratory QA/QC**

- For all matrices, no Method Blank value outliers occur;
- Breaches of holding times occurred in particular for pH analysis; however, levels were confirmed via MDWES field analysis.

If further information is required, refer to the ALS Interpretive Quality Control report in Appendix C

### **7.5 Quality Control**

To ensure the quality of the sampling method and laboratory analysis Quality Control (QC) samples were collected consisting of one (1) Rinsate Blank, one (1) Field Blank, one (1) set of duplicate and triplicate samples of a groundwater sample.

- A rinsate sample was collected for each day of field sampling (QC7);
- A field blank was collected for each day of field sampling (QC6);
- WRMW4-004 was used as the QC4 (duplicate) and QC5 (triplicate).

Laboratory certificates of analysis including sample receipt notification, chain of custody, and laboratory quality control are available in Appendix C.

The reproducibility of the sampling and analytical methodology is measured as precision. Laboratory and field precision is measured using the Relative Percent Difference (RPD) between the sample and its duplicates. For those RPD values which exceed a generally acceptable 30% - 50% (Australian Standard AS 4482.1), data precision is considered poor, however, consideration needs to be given to sample homogeneity and the

concentrations detected. Therefore, the acceptable ranges adopted for the RPDs are based on the laboratories RPD acceptance criteria and are dependent on the magnitude of results in comparison to the limits of reporting (LOR) as follows:

Result < 10 times LOR = No limit

Result 10 – 20 times LOR = 0% - 50%

Result > 20 times LOR = 0% - 20%

Where values are reported below the laboratory LOR, RPDs will not be calculated.

Groundwater QC results (Table 6) found three RPD outside the acceptable criteria within the duplicate (QC4) and triplicate (QC5) samples for turbidity (QC4 & QC5), total aluminium (QC5) and total iron (QC5). However, no analyte levels recorded exceed any of the adopted assessment criteria and ultimately are not expected to affect environmental conditions.

It is MDWES opinion that the variances noted between the primary, duplicate and triplicate sample could be due to differing sample and laboratory techniques. In addition, small variance within the results reported can exaggerate RPD.

ALS Laboratory Group QC documentation (Appendix C) indicate that the lab's internal QC program was observed.

Laboratory analysis of QA samples indicates pH levels below that of the lower assessment level of the ADWG AV and Long-term Irrigation criteria for QC6 (blank) and QC7 (rinsate) respectively. Detailed results are available in Table 7.

## **7.6 Waste Disposal**

Sampling was completed in consultation with MDWES Standard Operating Procedure and all waste was disposed of appropriately as to not impose a risk or cause contamination

## 8 ASSESSMENT CRITERIA

Laboratory analyses of groundwater samples undertaken onsite are presented in Table 1 through to Table 5. To assess the groundwater quality at the Site, water quality results were compared against the criteria outlined within the DEC's *Contaminated Site Management Series - Assessment Levels for Soil, Sediment and Water* (DEC, 2010). Laboratory results were compared against the following criteria:

- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* prepared by the Australian and New Zealand Environment and Conservation Council (ANZECC 2000) as reproduced in the DEC's *Contaminated Site Management Series - Assessment Levels for Soil, Sediment and Water* (DEC 2010):
  - Freshwater Ecosystems
  - Marine Ecosystems
  - Short-term Irrigation Water
  - Long-term Irrigation Water
- Department of Health *Contaminated Sites Reporting Guideline for Chemicals in Groundwater*, (DoH 2006):
  - Domestic Non-Potable groundwater use
- National Health and Medical Research Council and Agriculture and Resource Management Council of Australia and New Zealand *Australian Drinking Water Guidelines* (NHMRC & ARMCANZ 2004):
  - Drinking Water Health Value
  - Drinking Water Aesthetic Value



## 9 RESULTS

Laboratory results for the GME conducted by MDWES in June 2013 are presented in Tables 1 to Table 5. The groundwater monitoring field sheets are presented in Appendix B. Laboratory analysis and certificates for the groundwater sampling event are available in Appendix C.

The following notes are the summaries of laboratory results and the comparison to assessment criteria.

### 9.1.1 Total Petroleum Hydrocarbons (TPH)

Each of the TPH fractions analysed were generally below the laboratory LOR. The following TPH fractions, indicated in Table D below, were above the LOR. However, none of the TPH analysed identified concentrations above the assessment criteria adopted.

Table D: Summary of TPH against LOR

Analytes	LOR	Location and depth of analytes above the LOR concentration
C <sub>15</sub> – C <sub>28</sub>	100	WRMW1 (200µg/L), WRMW3 (110µg/L)
C <sub>29</sub> – C <sub>36</sub>	50	WRMW3 (100µg/L)
C <sub>10</sub> – C <sub>36</sub> (sum)	50	WRMW1 (200µg/L), WRMW3 (210µg/L)

### 9.1.2 Total Recoverable Hydrocarbons (TRH)

Each of the TRH fractions analysed were generally below the laboratory LOR. The following TRH fractions within Table E below were above the LOR. However, none of the TRH analysed identified concentrations above the assessment criteria adopted.

Table E: Summary of TRH against LOR

Analytes	LOR	Location and depth of analytes above the LOR concentration
>C <sub>16</sub> – C <sub>34</sub>	100	WRMW1 (220µg/L), WRMW3 (180µg/L)
>C <sub>10</sub> – C <sub>40</sub> (sum)	100	WRMW1 (220µg/L), WRMW3 (180µg/L)

### 9.1.3 Monocyclic Aromatic Hydrocarbons (MAH)

Each of the speciated MAH analysed were below the LOR. Furthermore, there were no elevated concentrations above the assessment criteria adopted.

### 9.1.4 Polycyclic Aromatic Hydrocarbons (PAH)

Each of the speciated PAH analysed were below the LOR. Furthermore, there were no elevated concentrations above the assessment criteria adopted.

### 9.1.5 Phenolic Compounds

Each of the speciated phenolic compounds analysed were below the LOR. Furthermore, there were no elevated concentrations above the assessment criteria adopted.

### 9.1.6 Benzene, Toluene, Ethyl Benzene, Xylene (BTEX)

Each of the speciated BTEX analytes analysed were below the LOR. Furthermore, there were no elevated concentrations above the assessment criteria adopted.

### 9.1.7 Metals

The following dissolved metals exceedances were detected:

- Dissolved aluminium exceeded the following assessment criteria at the associated locations:
  - WRMW4 and WRMW5 exceeded Fresh Waters assessment criteria.
- Dissolved zinc exceeded the following assessment criteria at the associated locations:
  - WRMW1, WRMW2, WRMW3, WRMW4 and WRMW5 exceeded Fresh Waters and Marine Waters assessment criteria.
- Dissolved iron exceeded the following assessment criteria at the associated locations:
  - WRMW1 exceeded Fresh Waters, Marine Waters and the Long-term Irrigation Water assessment criteria;
  - WRMW2 exceeded Fresh Waters, Marine Waters, Long-term Irrigation Water, and ADWG AV assessment criteria.

The following total metals exceedances were detected:

- Total aluminium exceeded the following assessment criteria at the associated locations:
  - WRMW4 exceeded Fresh Waters and ADWG AV assessment criteria;
  - WRMW2 and WRMW5 exceeded Fresh Waters, ADWG AV and DoH assessment criteria;
  - WRMW1 exceeded Fresh Waters, ADWG AV, DoH and Long-term Irrigation Water assessment criteria;
  - WRMW3 exceeded all assessment criteria.
- Total copper exceeded the Fresh Water assessment criteria for all locations.
- Total lead exceeded the following assessment criteria at the associated locations:
  - WRMW2 exceeded Fresh Waters and Marine Waters assessment criteria;
  - WRMW1 and WRMW5 exceeded Fresh Waters, Marine Waters and ADWG HV assessment criteria.
  - WRMW3 exceeded Fresh Waters, Marine Waters, ADWG HV and DoH assessment criteria.
- Total manganese exceeded ADWG AV assessment criteria within WRMW3
- Total nickel exceeded Fresh Waters, Marine Waters and ADWG HV assessment criteria within WRMW3.
- Total zinc exceeded the following assessment criteria at the associated locations:
  - WRMW1, WRMW2, WRMW, WRMW4 exceeded Fresh Waters and Marine Waters assessment criteria;
  - WRMW5 exceeded Fresh Waters assessment criteria.
- Total iron exceeded the following assessment criteria at the associated locations:
  - WRMW1 and WRMW2 exceeded Long-term Irrigation Waters, Fresh Waters, Marine Waters and ADWG AV assessment criteria;
  - WRMW3 exceeded Long-term Irrigation Water, Fresh Waters, Marine Waters, ADWG AV, DoH and Short-term term irrigation Water assessment criteria.

### **9.1.8 Organochlorine Pesticides (OC)**

Each of the speciated OC analysed were below the LOR. Furthermore, there were no elevated concentrations above the assessment criteria adopted.

### **9.1.9 Organophosphorus Pesticides (OP)**

Each of the speciated OP analysed were below the LOR. Furthermore, there were no elevated concentrations above the assessment criteria adopted.

### **9.1.10 Major Anions and Cations**

There were no elevated concentrations of the major anions and cations above the assessment criteria adopted.

### **9.1.11 Nutrients**

Total Nitrogen exceeded Fresh Waters assessment criteria at WRMW4 and WRMW5.

Total Phosphorus exceeded Fresh Waters assessment criteria at WRMW3.

## 9.2 Historical Data

Laboratory analyses of samples completed for GME#4 are tabulated against historical monitoring events to identify changes in groundwater quality (attached Table 1 to Table 5). The following points are comparisons of current results from GME#4 against historical data.

- Laboratory results of MW1 samples indicate an increase in pH, Total Aluminium, Total Lead, Total Zinc, Total Lead, TRH (<C<sub>16</sub> – C<sub>34</sub> Fraction), and TPH (C<sub>15</sub> – C<sub>28</sub> Fraction). Decreases in levels were observed for Dissolved Aluminium, Total Zinc, and Total Nitrogen. All other analytes remained relatively similar throughout monitoring events.
- MW2 laboratory results indicate that pH, Suspended Solids (SS), Turbidity, Dissolved and Total Iron and Total Aluminium have increased between monitoring events. Dissolved Aluminium, Dissolved Zinc, Dissolved Nickel, Total Copper and Total Nitrogen have decreased, whilst all other analytes have remained similar.
- Results for MW3 show that Dissolved Aluminium, Dissolved Manganese, Dissolved Iron, Total Nitrogen and Total Phosphorus have decreased. Turbidity, SS, Acidity, Dissolved Zinc, Total Aluminium, Total Copper, Total Lead, Total Manganese, Total Nickel, Total Zinc, Total Iron, TPH (C<sub>15</sub> – C<sub>28</sub> Fraction and C<sub>29</sub> – C<sub>36</sub> Fraction), and TRH (>C<sub>16</sub> – C<sub>34</sub> Fraction) have increased. All other analytes remained similar throughout all monitoring events.
- Laboratory results of MW4 indicate a decrease in SS, Turbidity, Chloride, Dissolved Aluminium, Dissolved Nickel, Dissolved Zinc, Total Aluminium, Total Copper, Total Lead, Total Nickel, Total Zinc, Total Iron, Total Nitrogen and Total Phosphorus. An increase was only evident in TDS. All other analytes remained relatively similar over the monitoring events.
- Comparisons of MW5 results indicate a decrease in TDS, Dissolved Aluminium, Dissolved Zinc, Total Aluminium, Total Copper, Total Lead, Total Zinc and Total Iron, whilst increases were evident in pH, Acidity and Total Nitrogen. All other analytes remained relatively similar throughout previous monitoring events.
- MW6 was not sampled due to the well being dry.

## 9.3 Groundwater Levels

The depth to groundwater was measured during the GME on the 3<sup>rd</sup> June 2013 and tabulated with historical data (Table F). Commencement of monthly depth to groundwater measurements has also occurred with groundwater depths presented in Table G.

An interface meter was used to verify the presence / absence of free phase hydrocarbon products over the groundwater with no free phase products detected. Groundwater is intercepted between 18.9 RL mAHD (Relative Level metres Australian Height Datum) and 23.3 RL mAHD.

Plotting the water table values enable determination of groundwater direction. Figure 3 identifies a groundwater flux towards in north-north west direction.

Table F: Groundwater Measurements

Groundwater Well I.D.	Date	Top of Casing	Water Level		
		RL mAHD	mBGL	RL mAHD	Change mm
WRMW1	18/05/2012	27.281	3.700	23.581	N/A
	30/08/2012		3.455	23.826	-245
	11/10/2012		3.130	24.151	-325
	15/01/2013		3.646	23.635	516
	3/06/2013		3.987	23.294	341
WRMW2	18/05/2012	30.607	7.666	22.941	N/A
	30/08/2012		7.26	23.347	-406
	11/10/2012		7.316	23.291	56
	15/01/2013		7.682	22.925	366
	3/06/2013		7.924	22.683	242
WRMW3	18/05/2012	34.622	11.846	22.776	N/A
	30/08/2012		11.725	22.897	-121
	11/10/2012		11.794	22.828	69
	15/01/2013		11.858	22.764	64
	3/06/2013		12.197	22.425	339
WRMW4	18/05/2012	27.751	8.509	19.242	N/A
	30/08/2012		7.79	19.961	-719
	11/10/2012		7.753	19.998	-37
	15/01/2013		8.289	19.462	536
	3/06/2013		8.872	18.879	583
WRMW5	18/05/2012	29.034	8.836	20.198	N/A
	30/08/2012		8.28	20.754	-556
	11/10/2012		8.170	20.864	-110
	15/01/2013		8.641	20.393	471
	3/06/2013		9.322	19.712	681
WRMW6	18/05/2012	31.611	8.759	22.852	N/A
	30/08/2012		9.215	22.396	456
	11/10/2012		8.998	22.613	-217
	15/01/2013		9.312	22.299	314
	3/06/2013		9.917	21.694	605

**Table G:** Groundwater Levels

SAMPLE LOCATION		MW1			MW2			MW3			MW4			MW5			MW6		
		Standpipe (m):	0.45	Ground (RL mAHD):	Standpipe (m):	0.68	Ground (RL mAHD):	Standpipe (m):	0.51	Ground (RL mAHD):	Standpipe (m):	0.45	Ground (RL mAHD):	Standpipe (m):	0.68	Ground (RL mAHD):	Standpipe (m):	0.51	Ground (RL mAHD):
Date	Day	Water Level (mm TOC)	Water Level Change (mm)	Water Level (mbgl)	Water Level (mm TOC)	Water Level Change (mm)	Water Level (mbgl)	Water Level (mm TOC)	Water Level Change (mm)	Water Level (mbgl)	Water Level (mm TOC)	Water Level Change (mm)	Water Level (mbgl)	Water Level (mm TOC)	Water Level Change (mm)	Water Level (mbgl)	Water Level (mm TOC)	Water Level Change (mm)	Water Level (mbgl)
<b>Trigger Level</b>																			
18/5/12	Fri	-3700	-3700	-3.25	-7666	-7666	-6.99	-11846	-11846	-11.34	-8509	-8509	-8.06	-8836	-8836	-8.16	-8759	-8759	-8.25
30/8/12	Thu	-3455	245	-3.01	-7260	406	-6.58	-11725	121	-11.22	-7790	719	-7.34	-8280	556	-7.60	-9215	-456	-8.71
15/1/13	Tue	-3646	-191	-3.20	-7682	-422	-7.00	-11858	-133	-11.35	-8289	-499	-7.84	-8641	-361	-7.96	-9312	-97	-8.80
21/3/13	Thu	-3870	-224	-3.42	-7530	152	-6.85	-12110	-252	-11.60	-8830	-541	-8.38	-9130	-489	-8.45	-9710	-398	-9.20
23/4/13	Tue	-4000	-130	-3.55	-7600	-70	-6.92				-8960	-130	-8.51	-9310	-180	-8.63	-9865	-155	-9.36
3/6/13	Mon	-3987	13	-3.54	-7924	-324	-7.24	-12197	-87	-11.69	-8872	88	-8.42	-9322	-12	-8.64	-9917	-52	-9.41
18/6/13	Tue	-4045	-58	-3.60	-7570	354	-6.89	-12230	-33	-11.72	-8865	7	-8.42	-9310	12	-8.63	-9917	0	-9.41

NOTES: 1. MW3 inaccessible 23/4/13

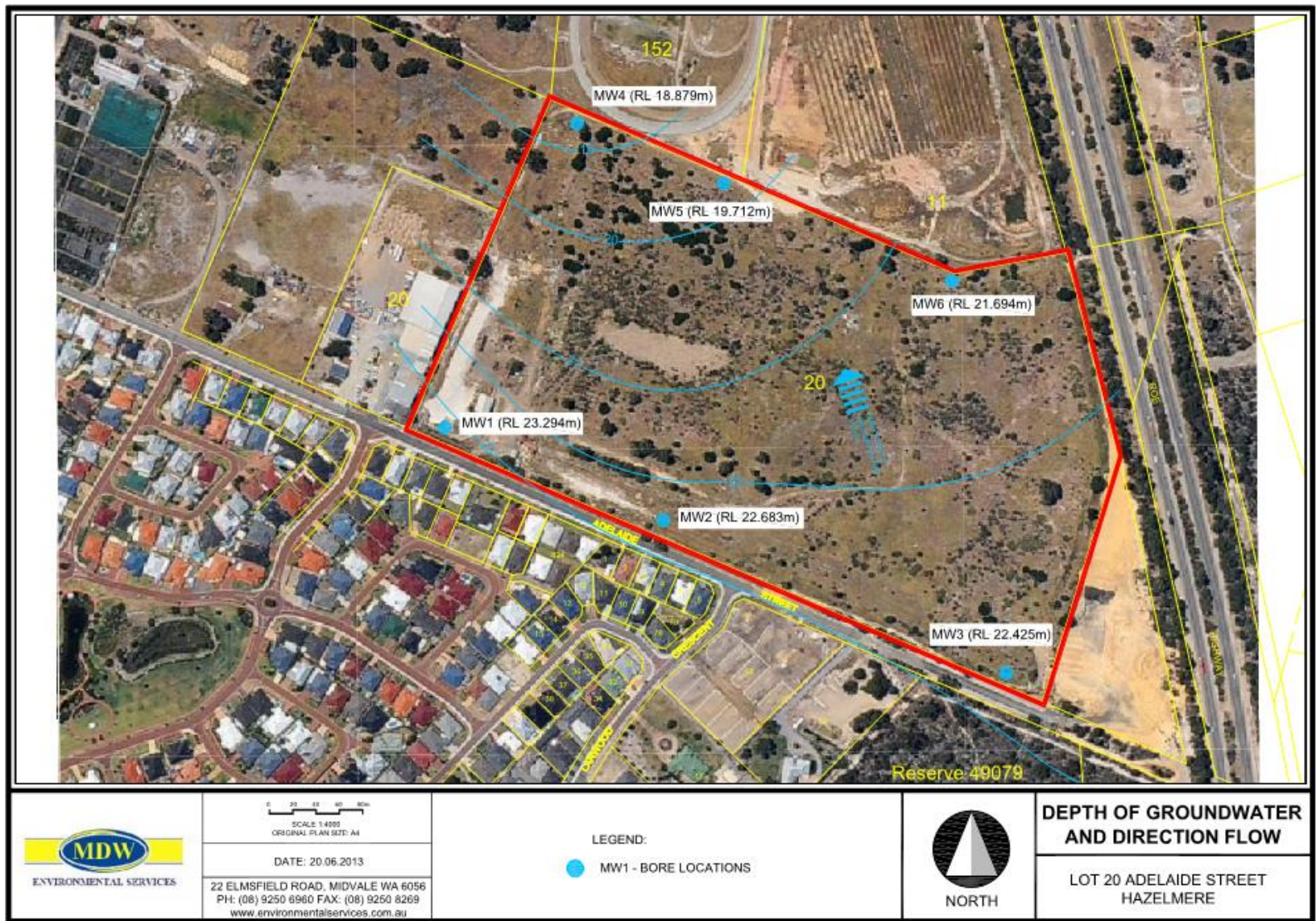


Figure 3 Groundwater Contours

## 10 DISCUSSION & RECOMMENDATIONS

Standing water level measurements recorded by MDWES during the GME sampling indicate that groundwater is encountered between RL 18.9 mAHD and 23.3 mAHD beneath the Site. Based upon current redevelopment plans, groundwater will not be intercepted during the proposed remediation work.

Laboratory results indicate that the groundwater beneath the site is fresh and mildly acidic to brackish with pH ranging from 5.57 to 7.79. This is an acceptable range of pH for groundwater within this locality.

Contamination of the groundwater from material previously deposited on the Site appears to be minimal. With the exception of metalloids, nutrients and low levels of TPH in WRMW1 and WRMW3, all other PCOC were below laboratory detection limits.

Metalloid results could be considered higher than expected for background waters within this locality, however, elevated levels of suspended solids within majority of the samples could have contributed to artificially increasing the results. Dissolved metals analysed are significantly lower than the total metals results and are more indicative of the quality of water that would be abstracted for use for dust suppression and compaction.

Although nutrient levels in WRMW3, WRMW4 and WRMW5 were slightly elevated above ANZECC criteria, surface waters are not located in the immediate vicinity of the site and downstream receptors are likely to be more significantly impacted upon by land uses to the north of the site including rendering facilities.

Comparison of historical data indicates that concentrations of TPH, a contaminant of high concern is currently present in WRMW3. Referring to the historical data, it is apparent that TPH has an intermittent presence in the groundwater at WRMW3. As the well is not in any landfill, it is likely that seasonal infiltration of rainfall from surface landfill material is the influential factor.

MDWES are of the opinion that the contamination of the groundwater from material previously deposited on the Site is minimal and the Site does not appear to be a source for contamination external to the site boundaries. Groundwater flux appears to be in a northwest direction and if the properties to the north of the site are to be included in the redevelopment proposal for this site, it is recommended that groundwater investigations be continued on the property to ensure sufficient data is collected.

It is continued recommendation that groundwater gauging be completed on a monthly basis and laboratory analysis be completed on a quarterly basis until the remediation commence to gather additional groundwater data prior to the inert wastes being disturbed during remediation earthmoving activities.



## 11 REFERENCES

ANZECC (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ).

DEC (2010) *Assessment Levels for Soil, Sediment and Water*, Contaminated Sites Management Series, Contaminated Sites Branch

DEP (2004) *Potentially Contaminating Activities, Industries and Land Uses*, Contaminated Sites Management Series

DoH (2006) *Contaminated Sites Reporting Guideline for Chemicals in Groundwater*

DEP (2001) *Reporting on Site Assessments*, Contaminated Sites Management Series.

## **TABLES**



Table 1  
WRMW1 Laboratory Results  
E2012-031

Analyte grouping/Analyte	Units	Fresh Waters	Marine Waters	Drinking Water Health Value (HV)	Drinking Water Aesthetic Value (AV)	Domestic non-potable groundwater use	Short-term Irrigation Water	Long-term Irrigation Water	18/05/2012	30/08/2012	15/01/2013	4/06/2013
									WRMW1	WRMW1	WRMW1	WRMW1
Chloromethane	µg/L								<50	<50	<50	<50
Vinyl chloride	µg/L			0.0003		0.003			<50	<50	<50	<50
Bromomethane	µg/L								<50	<50	<50	<50
Chloroethane	µg/L								<50	<50	<50	<50
Trichlorofluoromethane	µg/L								<50	<50	<50	<50
1,1-Dichloroethene	µg/L			0.03		0.3			<5	<5	<5	<5
Iodomethane	µg/L								<5	<5	<5	<5
trans-1,2-Dichloroethene	µg/L								<5	<5	<5	<5
1,1-Dichloroethane	µg/L								<5	<5	<5	<5
cis-1,2-Dichloroethene	µg/L								<5	<5	<5	<5
1,1,1-Trichloroethane	µg/L								<5	<5	<5	<5
1,1-Dichloropropylene	µg/L								<5	<5	<5	<5
Carbon Tetrachloride	µg/L								<5	<5	<5	<5
1,2-Dichloroethane	µg/L			0.003		0.03			<5	<5	<5	<5
Trichloroethene	µg/L								<5	<5	<5	<5
Dibromomethane	µg/L								<5	<5	<5	<5
1,1,2-Trichloroethane	µg/L	6500	1900						<5	<5	<5	<5
1,3-Dichloropropane	µg/L								<5	<5	<5	<5
Tetrachloroethene	µg/L			0.05		0.5			<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	µg/L								<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	µg/L								<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	µg/L								<5	<5	<5	<5
1,1,1,2,2-Tetrachloroethane	µg/L								<5	<5	<5	<5
1,2,3-Trichloropropane	µg/L								<5	<5	<5	<5
Pentachloroethane	µg/L								<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	µg/L								<5	<5	<5	<5
Hexachlorobutadiene	µg/L								<5	<5	<5	<5
<b>Halogenated Aromatic Compounds</b>												
Chlorobenzene	µg/L			0.30	0.01	0.01			<5	<5	<5	<5
Bromobenzene	µg/L								<5	<5	<5	<5
2-Chlorotoluene	µg/L								<5	<5	<5	<5
4-Chlorotoluene	µg/L								<5	<5	<5	<5
1,3-Dichlorobenzene	µg/L	0.26			0.02	0.02			<5	<5	<5	<5
1,4-Dichlorobenzene	µg/L	0.06		0.04	0.003	0.003			<5	<5	<5	<5
1,2-Dichlorobenzene	µg/L	0.16		1.5	0.001	0.001			<5	<5	<5	<5
1,2,4-Trichlorobenzene	µg/L	0.085	80	0.03	0.005	0.005			<5	<5	<5	<5
1,2,3-Trichlorobenzene	µg/L	0.003		0.03	0.005	0.005			<5	<5	<5	<5
<b>Trihalomethanes</b>												
Chloroform	µg/L								<5	<5	<5	<5
Bromodichloromethane	µg/L								<5	<5	<5	<5
Dibromochloromethane	µg/L								<5	<5	<5	<5
Bromoform	µg/L								<5	<5	<5	<5
<b>Phenolic Compounds</b>												
Phenol	µg/L	320	400						<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	µg/L	340		300	0.1	3000			<1.0	<1.0	<1.0	<1.0
2-Methylphenol	µg/L								<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	µg/L								<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	µg/L								<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	µg/L								<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	µg/L	120		200	0.3	2000			<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	µg/L								<1.0	<1.0	<1.0	<1.0
4-Chloro-3-Methylphenol	µg/L								<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	µg/L	3		20	2	200			<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	µg/L								<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	µg/L	3.6	11						<2.0	<2.0	<2.0	<2.0
<b>Polynuclear Aromatic Hydrocarbons</b>												
Naphthalene	µg/L	16	50						<1.0	<1.0	<1.0	<1.0
Acenaphthylene	µg/L								<1.0	<1.0	<1.0	<1.0
Acenaphthene	µg/L								<1.0	<1.0	<1.0	<1.0
Fluorene	µg/L								<1.0	<1.0	<1.0	<1.0
Phenanthrene	µg/L								<1.0	<1.0	<1.0	<1.0
Anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Pyrene	µg/L								<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Chrysene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	µg/L			0.01		0.1			<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	µg/L								<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	µg/L								<1.0	<1.0	<1.0	<1.0
<b>Total Petroleum Hydrocarbons</b>												
C6 - C9 Fraction	µg/L								<20	<20	<20	<20
C10 - C14 Fraction	µg/L								<50	<50	<50	<50
C15 - C28 Fraction	µg/L								<100	<100	<100	200
C29 - C36 Fraction	µg/L								<50	<50	<50	<50
C10 - C36 Fraction (sum)	µg/L	600 <sup>4</sup>							<50	<50	<50	200
<b>Total Recoverable Hydrocarbons</b>												
C6 - C10 Fraction	µg/L								-	-	-	<20
C6 - C10 Fraction minus BTEX (F)	µg/L								-	-	-	<20
>C10 - C16 Fraction	µg/L											<100
>C16 - C34 Fraction	µg/L											220
>C34 - C40 Fraction	µg/L											<100
>C10 - C40 Fraction (sum)	µg/L											220
<b>BTEX</b>												
Benzene	µg/L	0.95	0.5	0.001		0.01			-	-	-	<1
Toluene	µg/L			0.80	0.025	0.025			-	-	-	<2
Ethylbenzene	µg/L			0.30	0.003	0.003			-	-	-	<2
meta- & para-Xylene	µg/L	0.2		0.60	0.02	0.02			-	-	-	<2
ortho-Xylene	µg/L	0.3		0.60	0.02	0.02			-	-	-	<2
Total Xylenes	µg/L								-	-	-	<2
Sum of BTEX	µg/L								-	-	-	<1
Naphthalene	µg/L	0.016	0.015						-	-	-	<5

NOTES: 1. SRT Healthy Rivers Action Plan Long Term / Short Term Targets  
2. ANZECC 99% protection level for Chlordane  
3. ANZECC 99% protection level for Endosulfan  
4. Dutch intervention values (2000).  
5. pH > 6 / pH < 6  
6. ASS disturbance indicators  
7. Effluent treatment triggers





Table 2  
WRMW2 Laboratory Results  
E2012-031

Analyte grouping/Analyte	Units	Fresh Waters	Marine Waters	Drinking Water Health Value	Drinking Water Aesthetic	Domestic non-potable groundwater	Short-term Irrigation Water	Long-term Irrigation Water	18/05/2012 WRMW2	30/08/2012 WRMW2	15/01/2013 WRMW2	4/06/2013 WRMW2
Anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Pyrene	µg/L								<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Chrysene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	µg/L			0.01		0.1			<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	µg/L								<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	µg/L								<1.0	<1.0	<1.0	<1.0
<b>Total Petroleum Hydrocarbons</b>												
C6 - C9 Fraction	µg/L								<20	<20	<20	<20
C10 - C14 Fraction	µg/L								<50	<50	<50	<50
C15 - C28 Fraction	µg/L								<100	<100	<100	<100
C29 - C36 Fraction	µg/L								<50	<50	<50	<50
C10 - C36 Fraction (sum)	µg/L	600 <sup>4</sup>							<50	<50	<50	<50
<b>Total Recoverable Hydrocarbons</b>												
C6 - C10 Fraction	µg/L								-	-	-	<20
C6 - C10 Fraction minus BTEX (f	µg/L								-	-	-	<20
>C10 - C16 Fraction	µg/L											<100
>C16 - C34 Fraction	µg/L								-	-	-	<100
>C34 - C40 Fraction	µg/L								-	-	-	<100
>C10 - C40 Fraction (sum)	µg/L								-	-	-	<100
<b>BTEX</b>												
Benzene	µg/L	0.95	0.5	0.001		0.01			-	-	-	<1
Toluene	µg/L			0.80	0.025	0.025			-	-	-	<2
Ethylbenzene	µg/L			0.30	0.003	0.003			-	-	-	<2
meta- & para-Xylene	µg/L	0.2		0.60	0.02	0.02			-	-	-	<2
ortho-Xylene	µg/L	0.3		0.60	0.02	0.02			-	-	-	<2
Total Xylenes	µg/L								-	-	-	<2
Sum of BTEX	µg/L								-	-	-	<1
Naphthalene	µg/L	0.016	0.015						-	-	-	<5

NOTES: 1. SRT Healthy Rivers Action Plan Long Term / Short Term Targets  
2. ANZECC 99% protection level for Chlordane  
3. ANZECC 99% protection level for Endosulfan  
4. Dutch intervention values (2000).  
5. pH > 6 / pH < 6  
6. ASS disturbance indicators  
7. Effluent treatment triggers





Table 3  
WRMW3 Laboratory Results  
E2012-031

Analyte grouping/Analyte	Units	Fresh Waters	Marine Waters	Drinking Water Health Value (HV)	Drinking Water Aesthetic Value (AV)	Domestic non-potable groundwater use	Short-term Irrigation Water	Long-term Irrigation Water	18/05/2012	30/08/2012	15/01/2013	4/06/2013
									WRMW3	WRMW3	WRMW3	WRMW3
Vinyl chloride	µg/L			0.0003		0.003			<50	<50	<50	<50
Bromomethane	µg/L								<50	<50	<50	<50
Chloroethane	µg/L								<50	<50	<50	<50
Trichlorofluoromethane	µg/L								<50	<50	<50	<50
1,1-Dichloroethene	µg/L			0.03		0.3			<5	<5	<5	<5
Iodomethane	µg/L								<5	<5	<5	<5
trans-1,2-Dichloroethene	µg/L								<5	<5	<5	<5
1,1-Dichloroethane	µg/L								<5	<5	<5	<5
cis-1,2-Dichloroethene	µg/L								<5	<5	<5	<5
1,1,1-Trichloroethane	µg/L								<5	<5	<5	<5
1,1-Dichloropropylene	µg/L								<5	<5	<5	<5
Carbon Tetrachloride	µg/L								<5	<5	<5	<5
1,2-Dichloroethane	µg/L			0.003		0.03			<5	<5	<5	<5
Trichloroethene	µg/L								<5	<5	<5	<5
Dibromomethane	µg/L								<5	<5	<5	<5
1,1,2-Trichloroethane	µg/L	6500	1900						<5	<5	<5	<5
1,3-Dichloropropane	µg/L								<5	<5	<5	<5
Tetrachloroethene	µg/L			0.05		0.5			<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	µg/L								<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	µg/L								<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	µg/L								<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	µg/L								<5	<5	<5	<5
1,2,3-Trichloropropane	µg/L								<5	<5	<5	<5
Pentachloroethane	µg/L								<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	µg/L								<5	<5	<5	<5
Hexachlorobutadiene	µg/L								<5	<5	<5	<5
<b>Halogenated Aromatic Compounds</b>												
Chlorobenzene	µg/L			0.30	0.01	0.01			<5	<5	<5	<5
Bromobenzene	µg/L								<5	<5	<5	<5
2-Chlorotoluene	µg/L								<5	<5	<5	<5
4-Chlorotoluene	µg/L								<5	<5	<5	<5
1,3-Dichlorobenzene	µg/L	0.26			0.02	0.02			<5	<5	<5	<5
1,4-Dichlorobenzene	µg/L	0.06		0.04	0.003	0.003			<5	<5	<5	<5
1,2-Dichlorobenzene	µg/L	0.16		1.5	0.001	0.001			<5	<5	<5	<5
1,2,4-Trichlorobenzene	µg/L	0.085	80	0.03	0.005	0.005			<5	<5	<5	<5
1,2,3-Trichlorobenzene	µg/L	0.003		0.03	0.005	0.005			<5	<5	<5	<5
<b>Trihalomethanes</b>												
Chloroform	µg/L								<5	<5	<5	<5
Bromodichloromethane	µg/L								<5	<5	<5	<5
Dibromochloromethane	µg/L								<5	<5	<5	<5
Bromoform	µg/L								<5	<5	<5	<5
<b>Phenolic Compounds</b>												
Phenol	µg/L	320	400						<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	µg/L	340		300	0.1	3000			<1.0	<1.0	<1.0	<1.0
2-Methylphenol	µg/L								<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	µg/L								<2.0	3.3	<2.0	<2.0
2-Nitrophenol	µg/L								<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	µg/L								<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	µg/L	120		200	0.3	2000			<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	µg/L								<1.0	<1.0	<1.0	<1.0
4-Chloro-3-Methylphenol	µg/L								<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	µg/L	3		20	2	200			<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	µg/L								<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	µg/L	3.6	11						<2.0	<2.0	<2.0	<2.0
<b>Polynuclear Aromatic Hydrocarbons</b>												
Naphthalene	µg/L	16	50						<1.0	<1.0	<1.0	<1.0
Acenaphthylene	µg/L								<1.0	<1.0	<1.0	<1.0
Acenaphthene	µg/L								<1.0	<1.0	<1.0	<1.0
Fluorene	µg/L								<1.0	<1.0	<1.0	<1.0
Phenanthrene	µg/L								<1.0	<1.0	<1.0	<1.0
Anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Pyrene	µg/L								<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Chrysene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	µg/L			0.01		0.1			<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	µg/L								<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	µg/L								<1.0	<1.0	<1.0	<1.0
<b>Total Petroleum Hydrocarbons</b>												
C6 - C9 Fraction	µg/L								<20	<20	<20	<20
C10 - C14 Fraction	µg/L								<50	<50	<50	<50
C15 - C28 Fraction	µg/L								<100	<100	<100	110
C29 - C36 Fraction	µg/L								270	<50	<50	100
C10 - C36 Fraction (sum)	µg/L	600 <sup>4</sup>							270	<50	<50	210
<b>Total Recoverable Hydrocarbons</b>												
C6 - C10 Fraction	µg/L								-	-	-	<20
C6 - C10 Fraction minus BTEX (F)	µg/L								-	-	-	<20
>C10 - C16 Fraction	µg/L								-	-	-	<100
>C16 - C34 Fraction	µg/L								-	-	-	180
>C34 - C40 Fraction	µg/L								-	-	-	<100
>C10 - C40 Fraction (sum)	µg/L								-	-	-	180
<b>BTEX</b>												
Benzene	µg/L	0.95	0.5	0.001		0.01			-	-	-	<1
Toluene	µg/L			0.80	0.025	0.025			-	-	-	<2
Ethylbenzene	µg/L			0.30	0.003	0.003			-	-	-	<2
meta- & para-Xylene	µg/L	0.2		0.60	0.02	0.02			-	-	-	<2
ortho-Xylene	µg/L	0.3		0.60	0.02	0.02			-	-	-	<2
Total Xylenes	µg/L								-	-	-	<2
Sum of BTEX	µg/L								-	-	-	<1
Naphthalene	µg/L	0.016	0.015						-	-	-	<5

NOTES: 1. SRT Healthy Rivers Action Plan Long Term / Short Term Targets  
2. ANZECC 99% protection level for Chlordane  
3. ANZECC 99% protection level for Endosulfan  
4. Dutch intervention values (2000).  
5. pH > 6 / pH < 6  
6. ASS disturbance indicators  
7. Effluent treatment triggers



Table 4  
WRMW4 Laboratory Results  
E2012-031

Analyte grouping/Analyte	Units	Fresh Waters	Marine Waters	Drinking Water Health Value (HV)	Drinking Water Aesthetic Value (AV)	Domestic non-potable groundwater use	Short-term Irrigation Water	Long-term Irrigation Water	18/05/2012	30/08/2012	15/01/2013	4/06/2013
									WRMW4	WRMW4	WRMW4	WRMW4
Vinyl chloride	µg/L			0.0003		0.003			<50	<50	<50	<50
Bromomethane	µg/L								<50	<50	<50	<50
Chloroethane	µg/L								<50	<50	<50	<50
Trichlorofluoromethane	µg/L								<50	<50	<50	<50
1,1-Dichloroethene	µg/L			0.03		0.3			<5	<5	<5	<5
Iodomethane	µg/L								<5	<5	<5	<5
trans-1,2-Dichloroethene	µg/L								<5	<5	<5	<5
1,1-Dichloroethane	µg/L								<5	<5	<5	<5
cis-1,2-Dichloroethene	µg/L								<5	<5	<5	<5
1,1,1-Trichloroethane	µg/L								<5	<5	<5	<5
1,1-Dichloropropylene	µg/L								<5	<5	<5	<5
Carbon Tetrachloride	µg/L								<5	<5	<5	<5
1,2-Dichloroethane	µg/L			0.003		0.03			<5	<5	<5	<5
Trichloroethene	µg/L								<5	<5	<5	<5
Dibromomethane	µg/L								<5	<5	<5	<5
1,1,2-Trichloroethane	µg/L	6500	1900						<5	<5	<5	<5
1,3-Dichloropropane	µg/L								<5	<5	<5	<5
Tetrachloroethene	µg/L			0.05		0.5			<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	µg/L								<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	µg/L								<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	µg/L								<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	µg/L								<5	<5	<5	<5
1,2,3-Trichloropropane	µg/L								<5	<5	<5	<5
Pentachloroethane	µg/L								<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	µg/L								<5	<5	<5	<5
Hexachlorobutadiene	µg/L								<5	<5	<5	<5
<b>Halogenated Aromatic Compounds</b>												
Chlorobenzene	µg/L			0.30	0.01	0.01			<5	<5	<5	<5
Bromobenzene	µg/L								<5	<5	<5	<5
2-Chlorotoluene	µg/L								<5	<5	<5	<5
4-Chlorotoluene	µg/L								<5	<5	<5	<5
1,3-Dichlorobenzene	µg/L	0.26			0.02	0.02			<5	<5	<5	<5
1,4-Dichlorobenzene	µg/L	0.06		0.04	0.003	0.003			<5	<5	<5	<5
1,2-Dichlorobenzene	µg/L	0.16		1.5	0.001	0.001			<5	<5	<5	<5
1,2,4-Trichlorobenzene	µg/L	0.085	80	0.03	0.005	0.005			<5	<5	<5	<5
1,2,3-Trichlorobenzene	µg/L	0.003		0.03	0.005	0.005			<5	<5	<5	<5
<b>Trihalomethanes</b>												
Chloroform	µg/L								<5	<5	<5	<5
Bromodichloromethane	µg/L								<5	<5	<5	<5
Dibromochloromethane	µg/L								12	<5	<5	<5
Bromoform	µg/L								13	<5	<5	<5
<b>Phenolic Compounds</b>												
Phenol	µg/L	320	400						<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	µg/L	340		300	0.1	3000			<1.0	<1.0	<1.0	<1.0
2-Methylphenol	µg/L								<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	µg/L								<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	µg/L								<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	µg/L								<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	µg/L	120		200	0.3	2000			<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	µg/L								<1.0	<1.0	<1.0	<1.0
4-Chloro-3-Methylphenol	µg/L								<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	µg/L	3		20	2	200			<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	µg/L								<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	µg/L	3.6	11						<2.0	<2.0	<2.0	<2.0
<b>Polynuclear Aromatic Hydrocarbons</b>												
Naphthalene	µg/L	16	50						<1.0	<1.0	<1.0	<1.0
Acenaphthylene	µg/L								<1.0	<1.0	<1.0	<1.0
Acenaphthene	µg/L								<1.0	<1.0	<1.0	<1.0
Fluorene	µg/L								<1.0	<1.0	<1.0	<1.0
Phenanthrene	µg/L								<1.0	<1.0	<1.0	<1.0
Anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Pyrene	µg/L								<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Chrysene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	µg/L			0.01		0.1			<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	µg/L								<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	µg/L								<1.0	<1.0	<1.0	<1.0
<b>Total Petroleum Hydrocarbons</b>												
C6 - C9 Fraction	µg/L								<20	<20	<20	<20
C10 - C14 Fraction	µg/L								<50	<50	<50	<50
C15 - C28 Fraction	µg/L								<100	<100	<100	<100
C29 - C36 Fraction	µg/L								<50	<50	<50	<50
C10 - C36 Fraction (sum)	µg/L	600 <sup>4</sup>							<50	<50	<50	<50
<b>Total Recoverable Hydrocarbons</b>												
C6 - C10 Fraction	µg/L								-	-	-	<20
C6 - C10 Fraction minus BTEX (F)	µg/L								-	-	-	<20
>C10 - C16 Fraction	µg/L								-	-	-	<100
>C16 - C34 Fraction	µg/L								-	-	-	<100
>C34 - C40 Fraction	µg/L								-	-	-	<100
>C10 - C40 Fraction (sum)	µg/L								-	-	-	<100
<b>BTEX</b>												
Benzene	µg/L	0.95	0.5	0.001		0.01			-	-	-	<1
Toluene	µg/L			0.80	0.025	0.025			-	-	-	<2
Ethylbenzene	µg/L			0.30	0.003	0.003			-	-	-	<2
meta- & para-Xylene	µg/L	0.2		0.60	0.02	0.02			-	-	-	<2
ortho-Xylene	µg/L	0.3		0.60	0.02	0.02			-	-	-	<2
Total Xylenes	µg/L								-	-	-	<2
Sum of BTEX	µg/L								-	-	-	<1
Naphthalene	µg/L	0.016	0.015						-	-	-	<5

NOTES: 1. SRT Healthy Rivers Action Plan Long Term / Short Term Targets  
2. ANZECC 99% protection level for Chlordane  
3. ANZECC 99% protection level for Endosulfan  
4. Dutch intervention values (2000).  
5. pH > 6 / pH < 6  
6. ASS disturbance indicators  
7. Effluent treatment triggers



Table 5  
WRMW5 Laboratory Results  
E2012-031

Analyte grouping/Analyte	Units	Fresh Waters	Marine Waters	Drinking Water Health Value (HV)	Drinking Water Aesthetic Value (AV)	Domestic non-potable groundwater use	Short-term Irrigation Water	Long-term Irrigation Water	18/05/2012	30/08/2012	15/01/2013	4/06/2013
									WRMW5	WRMW5	WRMW5	WRMW5
Vinyl chloride	µg/L			0.0003		0.003			<50	<50	<50	<50
Bromomethane	µg/L								<50	<50	<50	<50
Chloroethane	µg/L								<50	<50	<50	<50
Trichlorofluoromethane	µg/L								<50	<50	<50	<50
1,1-Dichloroethene	µg/L			0.03		0.3			<5	<5	<5	<5
Iodomethane	µg/L								<5	<5	<5	<5
trans-1,2-Dichloroethene	µg/L								<5	<5	<5	<5
1,1-Dichloroethane	µg/L								<5	<5	<5	<5
cis-1,2-Dichloroethene	µg/L								<5	<5	<5	<5
1,1,1-Trichloroethane	µg/L								<5	<5	<5	<5
1,1-Dichloropropylene	µg/L								<5	<5	<5	<5
Carbon Tetrachloride	µg/L								<5	<5	<5	<5
1,2-Dichloroethane	µg/L			0.003		0.03			<5	<5	<5	<5
Trichloroethene	µg/L								<5	<5	<5	<5
Dibromomethane	µg/L								<5	<5	<5	<5
1,1,2-Trichloroethane	µg/L	6500	1900						<5	<5	<5	<5
1,3-Dichloropropane	µg/L								<5	<5	<5	<5
Tetrachloroethene	µg/L			0.05		0.5			<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	µg/L								<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	µg/L								<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	µg/L								<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	µg/L								<5	<5	<5	<5
1,2,3-Trichloropropane	µg/L								<5	<5	<5	<5
Pentachloroethane	µg/L								<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	µg/L								<5	<5	<5	<5
Hexachlorobutadiene	µg/L								<5	<5	<5	<5
<b>Halogenated Aromatic Compounds</b>												
Chlorobenzene	µg/L			0.30	0.01	0.01			<5	<5	<5	<5
Bromobenzene	µg/L								<5	<5	<5	<5
2-Chlorotoluene	µg/L								<5	<5	<5	<5
4-Chlorotoluene	µg/L								<5	<5	<5	<5
1,3-Dichlorobenzene	µg/L	0.26			0.02	0.02			<5	<5	<5	<5
1,4-Dichlorobenzene	µg/L	0.06		0.04	0.003	0.003			<5	<5	<5	<5
1,2-Dichlorobenzene	µg/L	0.16		1.5	0.001	0.001			<5	<5	<5	<5
1,2,4-Trichlorobenzene	µg/L	0.085	80	0.03	0.005	0.005			<5	<5	<5	<5
1,2,3-Trichlorobenzene	µg/L	0.003		0.03	0.005	0.005			<5	<5	<5	<5
<b>Trihalomethanes</b>												
Chloroform	µg/L								<5	<5	<5	<5
Bromodichloromethane	µg/L								5	<5	<5	<5
Dibromochloromethane	µg/L								20	<5	<5	<5
Bromoform	µg/L								22	<5	<5	<5
<b>Phenolic Compounds</b>												
Phenol	µg/L	320	400						<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	µg/L	340		300	0.1	3000			<1.0	<1.0	<1.0	<1.0
2-Methylphenol	µg/L								<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	µg/L								<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	µg/L								<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	µg/L								<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	µg/L	120		200	0.3	2000			<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	µg/L								<1.0	<1.0	<1.0	<1.0
4-Chloro-3-Methylphenol	µg/L								<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	µg/L	3		20	2	200			<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	µg/L								<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	µg/L	3.6	11						<2.0	<2.0	<2.0	<2.0
<b>Polynuclear Aromatic Hydrocarbons</b>												
Naphthalene	µg/L	16	50						<1.0	<1.0	<1.0	<1.0
Acenaphthylene	µg/L								<1.0	<1.0	<1.0	<1.0
Acenaphthene	µg/L								<1.0	<1.0	<1.0	<1.0
Fluorene	µg/L								<1.0	<1.0	<1.0	<1.0
Phenanthrene	µg/L								<1.0	<1.0	<1.0	<1.0
Anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Pyrene	µg/L								<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Chrysene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	µg/L			0.01		0.1			<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	µg/L								<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	µg/L								<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	µg/L								<1.0	<1.0	<1.0	<1.0
<b>Total Petroleum Hydrocarbons</b>												
C6 - C9 Fraction	µg/L								<20	<20	<20	<20
C10 - C14 Fraction	µg/L								<50	<50	<50	<50
C15 - C28 Fraction	µg/L								<100	<100	<100	<100
C29 - C36 Fraction	µg/L								<50	<50	<50	<50
C10 - C36 Fraction (sum)	µg/L	600 <sup>4</sup>							<50	<50	<50	<50
<b>Total Recoverable Hydrocarbons</b>												
C6 - C10 Fraction	µg/L								-	-	-	<20
C6 - C10 Fraction minus BTEX (F)	µg/L								-	-	-	<20
>C10 - C16 Fraction	µg/L								-	-	-	<100
>C16 - C34 Fraction	µg/L								-	-	-	<100
>C34 - C40 Fraction	µg/L								-	-	-	<100
>C10 - C40 Fraction (sum)	µg/L								-	-	-	<100
<b>BTEX</b>												
Benzene	µg/L	0.95	0.5	0.001		0.01			-	-	-	<1
Toluene	µg/L			0.80	0.025	0.025			-	-	-	<2
Ethylbenzene	µg/L			0.30	0.003	0.003			-	-	-	<2
meta- & para-Xylene	µg/L	0.2		0.60	0.02	0.02			-	-	-	<2
ortho-Xylene	µg/L	0.3		0.60	0.02	0.02			-	-	-	<2
Total Xylenes	µg/L								-	-	-	<2
Sum of BTEX	µg/L								-	-	-	<1
Naphthalene	µg/L	0.016	0.015						-	-	-	<5

NOTES: 1. SRT Healthy Rivers Action Plan Long Term / Short Term Targets  
2. ANZECC 99% protection level for Chlordane  
3. ANZECC 99% protection level for Endosulfan  
4. Dutch intervention values (2000).  
5. pH > 6 / pH < 6  
6. ASS disturbance indicators  
7. Effluent treatment triggers

Table 6  
Quality Control Duplicate and Triplicate Results  
E2012-031

Analyte grouping/Analyte	Units	WRMW4	QC4 (DUP)	DUP RL (%)	DUP RPD (%)	QC5 (TRIP)	TRIP RL (%)	TRIP RPD
pH Value	pH Unit	5.64	5.15	0-20	8.69	5.2	0-20	7.80
Electrical Conductivity	µS/cm	117	120	0-20	2.50	130	0-50	10.00
Total Dissolved Solids	mg/L	96	74	0-50	22.92	78	0-20	18.75
Suspended Solids	mg/L	6	7	0-20	14.29	<5	N/L	-
Turbidity	NTU	6.5	4.6	0-20	29.23	16	0-20	59.38
Total Alkalinity CaCO <sub>3</sub>	mg/L	<1	<1	N/L	-	<5	N/L	-
Acidity as CaCO <sub>3</sub>	mg/L	20	17	N/L	15.00	26	N/L	23.08
Sulfate as SO <sub>4</sub> <sup>2-</sup>	mg/L	1	2	N/L	50.00	-	-	-
Chloride	mg/L	17	18	0-50	5.56	36	N/L	52.78
<b>Dissolved Metals</b>								
Aluminium	mg/L	0.11	0.11	0-50	0.00	0.1	N/L	9.09
Arsenic	mg/L	<0.001	<0.001	N/L	-	<0.001	N/L	-
Cadmium	mg/L	<0.0001	<0.0001	N/L	-	<0.0001	N/L	-
Chromium	mg/L	<0.001	<0.001	N/L	-	0.019	N/L	-
Manganese	mg/L	0.003	0.002	N/L	33.33	<0.01	N/L	-
Nickel	mg/L	0.003	0.002	N/L	33.33	0.003	N/L	0.00
Selenium	mg/L	<0.01	<0.01	N/L	-	<0.001	N/L	-
Zinc	mg/L	0.027	0.03	N/L	10.00	0.021	N/L	22.22
Iron	mg/L	<0.05	<0.05	N/L	-	0.13	N/L	-
Ferrous Iron	mg/L	<0.05	<0.05	N/L	-	<0.1	N/L	-
Chromium VI	mg/L	<0.01	<0.01	N/L	-	-	-	-
<b>Total Metals</b>								
Aluminium	mg/L	0.48	0.48	0-20	0.00	0.23	0-20	52.08
Arsenic	mg/L	<0.001	0.001	N/L	-	<0.001	N/L	-
Cadmium	mg/L	<0.0001	0.0002	N/L	-	<0.0001	N/L	-
Chromium	mg/L	<0.001	<0.001	N/L	-	0.14	N/L	-
Copper	mg/L	0.003	0.004	N/L	25.00	-	-	-
Lead	mg/L	<0.001	<0.001	N/L	-	-	-	-
Manganese	mg/L	0.001	0.002	N/L	50.00	<0.01	N/L	-
Molybdenum	mg/L	<0.001	<0.001	N/L	-	-	-	-
Nickel	mg/L	0.002	0.002	N/L	0.00	0.003	N/L	33.33
Selenium	mg/L	<0.01	<0.01	N/L	-	<0.001	N/L	-
Silver	mg/L	<0.001	<0.001	N/L	-	-	-	-
Zinc	mg/L	0.021	0.02	N/L	4.76	0.021	N/L	0.00
Iron	mg/L	0.07	0.06	N/L	14.29	0.34	0-20	79.41
Mercury	mg/L	<0.0001	<0.0001	N/L	-	-	-	-
<b>Nutrients</b>								
Ammonia as N	mg/L	0.02	0.02	N/L	0.00	<0.2	N/L	-
Nitrite as N	mg/L	<0.01	<0.01	N/L	-	<0.01	N/L	-
Nitrate as N	mg/L	4.91	4.9	0-20	0.20	5.2	0-20	5.58
Kjeldhal Nitrogen	mg/L	<0.5	<0.5	N/L	-	-	-	-
Total Nitrogen	mg/L	4.9	4.9	0-20	0.00	5.2	0-20	5.77
Total Phosphorus	mg/L	<0.01	<0.01	N/L	-	0.02	N/L	-
Reactive Phosphorus	mg/L	<0.01	<0.01	N/L	-	<0.01	N/L	-
Sulfide	mg/L	<0.1	<0.1	N/L	-	0.5	N/L	-
COD	mg/L	<5	<5	N/L	-	20	N/L	-
BOD	mg/L	<2	3	N/L	-	<5	N/L	-
<b>Organochlorine Pesticides (OC)</b>								
alpha-BHC	µg/L	<0.5	<0.5	N/L	-	-	-	-
Hexachlorobenzene (HCB)	µg/L	<0.5	<0.5	N/L	-	-	-	-
beta-BHC	µg/L	<0.5	<0.5	N/L	-	-	-	-
gamma-BHC	µg/L	<0.5	<0.5	N/L	-	-	-	-
delta-BHC	µg/L	<0.5	<0.5	N/L	-	-	-	-
Heptachlor	µg/L	<0.5	<0.5	N/L	-	-	-	-
Aldrin	µg/L	<0.5	<0.5	N/L	-	-	-	-
Heptachlor epoxide	µg/L	<0.5	<0.5	N/L	-	-	-	-
trans-Chlordane	µg/L	<0.5	<0.5	N/L	-	-	-	-
alpha-Endosulfan	µg/L	<0.5	<0.5	N/L	-	-	-	-
cis-Chlordane	µg/L	<0.5	<0.5	N/L	-	-	-	-
Dieldrin	µg/L	<0.5	<0.5	N/L	-	-	-	-
4,4'-DDE	µg/L	<0.5	<0.5	N/L	-	-	-	-
Endrin	µg/L	<0.5	<0.5	N/L	-	-	-	-
beta-Endosulfan	µg/L	<0.5	<0.5	N/L	-	-	-	-
4,4'-DDD	µg/L	<0.5	<0.5	N/L	-	-	-	-
Endrin aldehyde	µg/L	<0.5	<0.5	N/L	-	-	-	-
Endosulfan sulfate	µg/L	<0.5	<0.5	N/L	-	-	-	-
4,4'-DDT	µg/L	<2.0	<2.0	N/L	-	-	-	-
Endrin ketone	µg/L	<0.5	<0.5	N/L	-	-	-	-
Methoxychlor	µg/L	<2.0	<2.0	N/L	-	-	-	-
<b>Organophosphorus Pesticides (OP)</b>								
Dichlorvos	µg/L	<0.5	<0.5	N/L	-	-	-	-
Demeton-S-methyl	µg/L	<0.5	<0.5	N/L	-	-	-	-
Monocrotophos	µg/L	<2.0	<2.0	N/L	-	-	-	-
Dimethoate	µg/L	<0.5	<0.5	N/L	-	-	-	-
Diazinon	µg/L	<0.5	<0.5	N/L	-	-	-	-
Chlorpyrifos-methyl	µg/L	<0.5	<0.5	N/L	-	-	-	-
Parathion-methyl	µg/L	<2.0	<2.0	N/L	-	-	-	-
Malathion	µg/L	<0.5	<0.5	N/L	-	-	-	-
Fenthion	µg/L	<0.5	<0.5	N/L	-	-	-	-
Chlorpyrifos	µg/L	<0.5	<0.5	N/L	-	-	-	-
Parathion	µg/L	<2.0	<2.0	N/L	-	-	-	-
Pirimphos-ethyl	µg/L	<0.5	<0.5	N/L	-	-	-	-
Chlorfenvinphos	µg/L	<0.5	<0.5	N/L	-	-	-	-
Bromophos-ethyl	µg/L	<0.5	<0.5	N/L	-	-	-	-
Fenamiphos	µg/L	<0.5	<0.5	N/L	-	-	-	-
Prothiofos	µg/L	<0.5	<0.5	N/L	-	-	-	-
Ethion	µg/L	<0.5	<0.5	N/L	-	-	-	-
Carbophenothion	µg/L	<0.5	<0.5	N/L	-	-	-	-
Azinphos Methyl	µg/L	<0.5	<0.5	N/L	-	-	-	-
<b>Monocyclic Aromatic Hydrocarbons</b>								
Benzene	µg/L	-	-	N/L	-	-	-	-
Toluene	µg/L	-	-	N/L	-	-	-	-

Table 6  
Quality Control Duplicate and Triplicate Results  
E2012-031

Analyte grouping/Analyte	Units	WRMW4	QC4 (DUP)	DUP RL (%)	DUP RPD (%)	QC5 (TRIP)	TRIP RL (%)	TRIP RPD
Ethylbenzene	µg/L	-	-	N/L	-	-	-	-
meta- & para-Xylene	µg/L	-	-	N/L	-	-	-	-
Styrene	µg/L	<5	<5	N/L	-	-	-	-
ortho-Xylene	µg/L	-	-	N/L	-	-	-	-
Isopropylbenzene	µg/L	<5	<5	N/L	-	-	-	-
n-Propylbenzene	µg/L	<5	<5	N/L	-	-	-	-
1,3,5-Trimethylbenzene	µg/L	<5	<5	N/L	-	-	-	-
sec-Butylbenzene	µg/L	<5	<5	N/L	-	-	-	-
1,2,4-Trimethylbenzene	µg/L	<5	<5	N/L	-	-	-	-
tert-Butylbenzene	µg/L	<5	<5	N/L	-	-	-	-
p-Isopropyltoluene	µg/L	<5	<5	N/L	-	-	-	-
n-Butylbenzene	µg/L	<5	<5	N/L	-	-	-	-
<b>Oxygenated Compounds</b>								
Vinyl Acetate	µg/L	<50	<50	N/L	-	-	-	-
2-Butanone (MEK)	µg/L	<50	<50	N/L	-	-	-	-
4-Methyl-2-pentanone (MIBK)	µg/L	<50	<50	N/L	-	-	-	-
2-Hexanone (MBK)	µg/L	<50	<50	N/L	-	-	-	-
<b>Sulfonated Compounds</b>								
Carbon disulfide	µg/L	<5	<5	N/L	-	-	-	-
<b>Fumigants</b>								
2,2-Dichloropropane	µg/L	<5	<5	N/L	-	-	-	-
1,2-Dichloropropane	µg/L	<5	<5	N/L	-	-	-	-
cis-1,3-Dichloropropylene	µg/L	<5	<5	N/L	-	-	-	-
trans-1,3-Dichloropropylene	µg/L	<5	<5	N/L	-	-	-	-
1,2-Dibromoethane (EDB)	µg/L	<5	<5	N/L	-	-	-	-
<b>Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	µg/L	<50	<50	N/L	-	-	-	-
Chloromethane	µg/L	<50	<50	N/L	-	-	-	-
Vinyl chloride	µg/L	<50	<50	N/L	-	-	-	-
Bromomethane	µg/L	<50	<50	N/L	-	-	-	-
Chloroethane	µg/L	<50	<50	N/L	-	-	-	-
Trichlorofluoromethane	µg/L	<50	<50	N/L	-	-	-	-
1,1-Dichloroethene	µg/L	<5	<5	N/L	-	-	-	-
Iodomethane	µg/L	<5	<5	N/L	-	-	-	-
trans-1,2-Dichloroethene	µg/L	<5	<5	N/L	-	-	-	-
1,1-Dichloroethane	µg/L	<5	<5	N/L	-	-	-	-
cis-1,2-Dichloroethene	µg/L	<5	<5	N/L	-	-	-	-
1,1,1-Trichloroethane	µg/L	<5	<5	N/L	-	-	-	-
1,1-Dichloropropylene	µg/L	<5	<5	N/L	-	-	-	-
Carbon Tetrachloride	µg/L	<5	<5	N/L	-	-	-	-
1,2-Dichloroethane	µg/L	<5	<5	N/L	-	-	-	-
Trichloroethene	µg/L	<5	<5	N/L	-	-	-	-
Dibromomethane	µg/L	<5	<5	N/L	-	-	-	-
1,1,2-Trichloroethane	µg/L	<5	<5	N/L	-	-	-	-
1,3-Dichloropropane	µg/L	<5	<5	N/L	-	-	-	-
Tetrachloroethene	µg/L	<5	<5	N/L	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/L	<5	<5	N/L	-	-	-	-
trans-1,4-Dichloro-2-butene	µg/L	<5	<5	N/L	-	-	-	-
cis-1,4-Dichloro-2-butene	µg/L	<5	<5	N/L	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/L	<5	<5	N/L	-	-	-	-
1,2,3-Trichloropropane	µg/L	<5	<5	N/L	-	-	-	-
Pentachloroethane	µg/L	<5	<5	N/L	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/L	<5	<5	N/L	-	-	-	-
Hexachlorobutadiene	µg/L	<5	<5	N/L	-	-	-	-
<b>Halogenated Aromatic Compounds</b>								
Chlorobenzene	µg/L	<5	<5	N/L	-	-	-	-
Bromobenzene	µg/L	<5	<5	N/L	-	-	-	-
2-Chlorotoluene	µg/L	<5	<5	N/L	-	-	-	-
4-Chlorotoluene	µg/L	<5	<5	N/L	-	-	-	-
1,3-Dichlorobenzene	µg/L	<5	<5	N/L	-	-	-	-
1,4-Dichlorobenzene	µg/L	<5	<5	N/L	-	-	-	-
1,2-Dichlorobenzene	µg/L	<5	<5	N/L	-	-	-	-
1,2,4-Trichlorobenzene	µg/L	<5	<5	N/L	-	-	-	-
1,2,3-Trichlorobenzene	µg/L	<5	<5	N/L	-	-	-	-
<b>Trihalomethanes</b>								
Chloroform	µg/L	<5	<5	N/L	-	-	-	-
Bromodichloromethane	µg/L	<5	<5	N/L	-	-	-	-
Dibromochloromethane	µg/L	<5	<5	N/L	-	-	-	-
Bromoform	µg/L	<5	<5	N/L	-	-	-	-
<b>Phenolic Compounds</b>								
Phenol	µg/L	<1.0	<1.0	N/L	-	-	-	-
2-Chlorophenol	µg/L	<1.0	<1.0	N/L	-	-	-	-
2-Methylphenol	µg/L	<1.0	<1.0	N/L	-	-	-	-
3- & 4-Methylphenol	µg/L	<2.0	<2.0	N/L	-	-	-	-
2-Nitrophenol	µg/L	<1.0	<1.0	N/L	-	-	-	-
2,4-Dimethylphenol	µg/L	<1.0	<1.0	N/L	-	-	-	-
2,4-Dichlorophenol	µg/L	<1.0	<1.0	N/L	-	-	-	-
2,6-Dichlorophenol	µg/L	<1.0	<1.0	N/L	-	-	-	-
4-Chloro-3-Methylphenol	µg/L	<1.0	<1.0	N/L	-	-	-	-
2,4,6-Trichlorophenol	µg/L	<1.0	<1.0	N/L	-	-	-	-
2,4,5-Trichlorophenol	µg/L	<1.0	<1.0	N/L	-	-	-	-
Pentachlorophenol	µg/L	<2.0	<2.0	N/L	-	-	-	-
<b>Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Acenaphthylene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Acenaphthene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Fluorene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Phenanthrene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Anthracene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Fluoranthene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Pyrene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Benz(a)anthracene	µg/L	<1.0	<1.0	N/L	-	-	-	-

Table 6  
Quality Control Duplicate and Triplicate Results  
E2012-031

Analyte grouping/Analyte	Units	WRMW4	QC4 (DUP)	DUP RL (%)	DUP RPD (%)	QC5 (TRIP)	TRIP RL (%)	TRIP RPD
Chrysene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Benzo(b)fluoranthene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Benzo(k)fluoranthene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Benzo(a)pyrene	µg/L	<0.5	<0.5	N/L	-	-	-	-
Indeno(1.2.3.cd)pyrene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Dibenz(a,h)anthracene	µg/L	<1.0	<1.0	N/L	-	-	-	-
Benzo(g,h,i)perylene	µg/L	<1.0	<1.0	N/L	-	-	-	-
<b>Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	µg/L	<20	<20	N/L	-	<0.02	N/L	-
C10 - C14 Fraction	µg/L	<50	<50	N/L	-	<0.02	N/L	-
C15 - C28 Fraction	µg/L	<100	<100	N/L	-	<0.04	N/L	-
C29 - C36 Fraction	µg/L	<50	<50	N/L	-	<0.04	N/L	-
C10 - C36 Fraction (sum)	µg/L	<50	<50	N/L	-	<0.04	N/L	-
<b>Total Recoverable Hydrocarbons</b>								
C6 - C10 Fraction	µg/L	<20	<20	N/L	-	-	-	-
C6 - C10 Fraction minus BTEX	µg/L	<20	<20	N/L	-	-	-	-
>C10 - C16 Fraction	µg/L	<100	<100	N/L	-	-	-	-
>C16 - C34 Fraction	µg/L	<100	<100	N/L	-	-	-	-
>C34 - C40 Fraction	µg/L	<100	<100	N/L	-	-	-	-
>C10 - C40 Fraction (sum)	µg/L	<100	<100	N/L	-	-	-	-
<b>BTEX</b>								
Benzene	µg/L	<1	<1	N/L	-	<0.001	N/L	-
Toluene	µg/L	<2	<2	N/L	-	<0.001	N/L	-
Ethylbenzene	µg/L	<2	<2	N/L	-	<0.001	N/L	-
meta- & para-Xylene	µg/L	<2	<2	N/L	-	-	-	-
ortho-Xylene	µg/L	<2	<2	N/L	-	-	-	-
Total Xylenes	µg/L	<2	<2	N/L	-	<0.003	N/L	-
Sum of BTEX	µg/L	<1	<1	N/L	-	-	-	-
Naphthalene	µg/L	<5	<5	N/L	-	-	-	-

NOTES: 1. SRT Healthy Rivers Action Plan Long Term / Short Term Targets  
2. ANZECC 99% protection level for Chlordane  
3. ANZECC 99% protection level for Endosulfan  
4. Dutch intervention values (2000).  
5. pH > 6 / pH < 6  
6. ASS disturbance indicators  
7. Effluent treatment triggers





Table 7  
Quality Control Rinsate and Blank Results  
E2012-031

Analyte grouping/Analyte	Units	ANZECC & ARMCANZ (2000) <sup>1</sup>		ADWG (2004) <sup>2</sup>		DOH (2006) <sup>3</sup>	ANZECC & ARMCANZ (2000) <sup>1</sup>		4/06/2013	
		Fresh Waters <sup>4</sup>	Marine Waters <sup>4</sup>	Drinking Water Health Value	Drinking Water Aesthetic Value	Domestic non-potable	Short-term Irrigation Water	Long-term Irrigation	QC6	QC7
Bromomethane	µg/L								<50	<50
Chloroethane	µg/L								<50	<50
Trichlorofluoromethane	µg/L								<50	<50
1,1-Dichloroethene	µg/L			0.03		0.3			<5	<5
Iodomethane	µg/L								<5	<5
trans-1,2-Dichloroethene	µg/L								<5	<5
1,1-Dichloroethane	µg/L								<5	<5
cis-1,2-Dichloroethene	µg/L								<5	<5
1,1,1-Trichloroethane	µg/L								<5	<5
1,1-Dichloropropylene	µg/L								<5	<5
Carbon Tetrachloride	µg/L								<5	<5
1,2-Dichloroethane	µg/L			0.003		0.03			<5	<5
Trichloroethene	µg/L								<5	<5
Dibromomethane	µg/L								<5	<5
1,1,2-Trichloroethane	µg/L	6500	1900						<5	<5
1,3-Dichloropropane	µg/L								<5	<5
Tetrachloroethene	µg/L			0.05		0.5			<5	<5
1,1,1,2-Tetrachloroethane	µg/L								<5	<5
trans-1,4-Dichloro-2-butene	µg/L								<5	<5
cis-1,4-Dichloro-2-butene	µg/L								<5	<5
1,1,2,2-Tetrachloroethane	µg/L								<5	<5
1,2,3-Trichloropropane	µg/L								<5	<5
Pentachloroethane	µg/L								<5	<5
1,2-Dibromo-3-chloropropane	µg/L								<5	<5
Hexachlorobutadiene	µg/L								<5	<5
<b>Halogenated Aromatic Compounds</b>										
Chlorobenzene	µg/L			0.30	0.01	0.01			<5	<5
Bromobenzene	µg/L								<5	<5
2-Chlorotoluene	µg/L								<5	<5
4-Chlorotoluene	µg/L								<5	<5
1,3-Dichlorobenzene	µg/L	0.26			0.02	0.02			<5	<5
1,4-Dichlorobenzene	µg/L	0.06		0.04	0.003	0.003			<5	<5
1,2-Dichlorobenzene	µg/L	0.16		1.5	0.001	0.001			<5	<5
1,2,4-Trichlorobenzene	µg/L	0.085	80	0.03	0.005	0.005			<5	<5
1,2,3-Trichlorobenzene	µg/L	0.003		0.03	0.005	0.005			<5	<5
<b>Trihalomethanes</b>										
Chloroform	µg/L								<5	<5
Bromodichloromethane	µg/L								<5	<5
Dibromochloromethane	µg/L								<5	<5
Bromoform	µg/L								<5	<5
<b>Phenolic Compounds</b>										
Phenol	µg/L	320	400						<1.0	<1.0
2-Chlorophenol	µg/L	340		300	0.1	3000			<1.0	<1.0
2-Methylphenol	µg/L								<1.0	<1.0
3- & 4-Methylphenol	µg/L								<2.0	<2.0
2-Nitrophenol	µg/L								<1.0	<1.0
2,4-Dimethylphenol	µg/L								<1.0	<1.0
2,4-Dichlorophenol	µg/L	120		200	0.3	2000			<1.0	<1.0
2,6-Dichlorophenol	µg/L								<1.0	<1.0
4-Chloro-3-Methylphenol	µg/L								<1.0	<1.0
2,4,6-Trichlorophenol	µg/L	3		20	2	200			<1.0	<1.0
2,4,5-Trichlorophenol	µg/L								<1.0	<1.0
Pentachlorophenol	µg/L	3.6	11						<2.0	<2.0
<b>Polynuclear Aromatic Hydrocarbons</b>										
Naphthalene	µg/L	16	50						<1.0	<1.0
Acenaphthylene	µg/L								<1.0	<1.0
Acenaphthene	µg/L								<1.0	<1.0
Fluorene	µg/L								<1.0	<1.0
Phenanthrene	µg/L								<1.0	<1.0
Anthracene	µg/L								<1.0	<1.0
Fluoranthene	µg/L								<1.0	<1.0
Pyrene	µg/L								<1.0	<1.0
Benz(a)anthracene	µg/L								<1.0	<1.0
Chrysene	µg/L								<1.0	<1.0
Benzo(b)fluoranthene	µg/L								<1.0	<1.0
Benzo(k)fluoranthene	µg/L								<1.0	<1.0
Benzo(a)pyrene	µg/L			0.01		0.1			<0.5	<0.5
Indeno(1,2,3-cd)pyrene	µg/L								<1.0	<1.0
Dibenz(a,h)anthracene	µg/L								<1.0	<1.0
Benzo(g,h,i)perylene	µg/L								<1.0	<1.0
<b>Total Petroleum Hydrocarbons</b>										
C6 - C9 Fraction	µg/L								<20	<20
C10 - C14 Fraction	µg/L								<50	<50
C15 - C28 Fraction	µg/L								<100	<100
C29 - C36 Fraction	µg/L								<50	<50
C10 - C36 Fraction (sum)	µg/L	600 <sup>4</sup>							<50	<50
<b>Total Recoverable Hydrocarbons</b>										
C6 - C10 Fraction	µg/L								<20	<20
C6 - C10 Fraction minus BTEX	µg/L								<20	<20
>C10 - C16 Fraction	µg/L								<100	<100
>C16 - C34 Fraction	µg/L								<100	<100
>C34 - C40 Fraction	µg/L								<100	<100
>C10 - C40 Fraction (sum)	µg/L								<100	<100
<b>BTEX</b>										
Benzene	µg/L	0.95	0.5	0.001		0.01			<1	<1
Toluene	µg/L			0.80	0.025	0.025			<2	<2
Ethylbenzene	µg/L			0.30	0.003	0.003			<2	<2
meta- & para-Xylene	µg/L	0.2		0.60	0.02	0.02			<2	<2
ortho-Xylene	µg/L	0.3		0.60	0.02	0.02			<2	<2
Total Xylenes	µg/L								<2	<2
Sum of BTEX	µg/L								<1	<1
Naphthalene	µg/L	0.016	0.015						<5	<5

NOTES: 1. SRT Healthy Rivers Action Plan Long Term / Short Term Targets  
2. ANZECC 99% protection level for Chlordane  
3. ANZECC 99% protection level for Endosulfan  
4. Dutch intervention values (2000).  
5. pH > 6 / pH < 6  
6. ASS disturbance indicators  
7. Effluent treatment triggers

## **Appendix A– Certificate of Title**

WESTERN



AUSTRALIA

REGISTER NUMBER <b>20/D76128</b>	
DUPLICATE EDITION <b>3</b>	DATE DUPLICATE ISSUED <b>13/6/2008</b>

**RECORD OF CERTIFICATE OF TITLE**  
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME **2054** FOLIO **299**

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES



**LAND DESCRIPTION:**

LOT 20 ON DIAGRAM 76128

**REGISTERED PROPRIETOR:**  
(FIRST SCHEDULE)

HAZELLAND PTY LTD OF SUITE 5, 17 FOLEY STREET, BALCATTA  
(TP K606822 ) REGISTERED 26 MAY 2008

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**  
(SECOND SCHEDULE)

1. \*K606823 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 26.5.2008.
2. \*L520703 MEMORIAL. CONTAMINATED SITES ACT 2003 (CONTAMINATED SITE - REMEDIATION REQUIRED) REGISTERED 30.12.2010.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.  
\* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.  
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 2054-299 (20/D76128).  
PREVIOUS TITLE: 1697-970, 1103-577.  
PROPERTY STREET ADDRESS: LOT 20 ADELAIDE ST, HAZELMERE.  
LOCAL GOVERNMENT AREA: CITY OF SWAN.

**Appendix B– Groundwater Field Sheets**



ENVIRONMENTAL SERVICES

### Monitoring Well Field Record

Job #: \_\_\_\_\_ Client: \_\_\_\_\_ Location: wastewock

Well ID: MW7 Date: 3-6-13 Sampler: DA/BV

#### Monitoring Well Information

Depth to Water: 3987 (mm TOC) Depth to Bottom: 6813 (m)

Standpipe: \_\_\_\_\_ (m) Monument Cover

Lock:  None  Padlock (YL)  Enviro Cap  Gatic

#### Equipment IDs

Water Quality Meter: YSI TTA Kit: \_\_\_\_\_

Pump: Low flow TALK Kit: \_\_\_\_\_

Dipper: consite QC Samples:  Yes  No ID: \_\_\_\_\_

Hydrocarbon Detected (Interface Meter):  Yes  No If yes, depth of free product: \_\_\_\_\_

#### Sampling

Sample ID: WRMW7-04 COC No: E2012-031-007

Time	pH	EC	DO	Temp	Redox	TTA	TALK
10.13	5.80	721	3.1	20.9	134.9		
10.17	5.80	823	3.4	21.8	129.2		
10.21	5.81	822	3.5	21.9	127.0		

#### Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



ENVIRONMENTAL SERVICES

### Monitoring Well Field Record

Job #: \_\_\_\_\_ Client: \_\_\_\_\_ Location: Waste rock / Hazelmere

Well ID: MW2 Date: 3-6-13 Sampler: DA/BV

#### Monitoring Well Information

Depth to Water: 7924 (mm TOC)      Depth to Bottom: 11.242 (m)

Standpipe: \_\_\_\_\_ (m)      Monument Cover

Lock:  None       Padlock (YL)       Enviro Cap       Gatic

#### Equipment IDs

Water Quality Meter: \_\_\_\_\_ TTA Kit: \_\_\_\_\_

Pump: \_\_\_\_\_ TALK Kit: \_\_\_\_\_

Dipper: \_\_\_\_\_ QC Samples:  Yes  No ID: \_\_\_\_\_

Hydrocarbon Detected (Interface Meter:)  Yes  No If yes, depth of free product: \_\_\_\_\_

#### Sampling

Sample ID: WRMW2-004      COC No: E2012-031-007

Time	pH	EC	DO	Temp	Redox	TTA	TALK
9.31	5.92	4.6	302	17.8	81.4		
9.34	4.73	<del>403.5</del> 403.5	1.2	20.3	171.7		
9.38	4.68	386.9	1.9	20.5	172.5		
9.39	4.67	378.2	2.3	20.5	172.5		

#### Comments

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



ENVIRONMENTAL SERVICES

### Monitoring Well Field Record

Job #: \_\_\_\_\_ Client: \_\_\_\_\_ Location: Hazelmere

Well ID: MW3 Date: 3-6-13 Sampler: DA/BV

#### Monitoring Well Information

Depth to Water: -12197 (mm TOC) Depth to Bottom: 15041 (m)

Standpipe: \_\_\_\_\_ (m) Monument Cover

Lock:  None  Padlock (YL)  Enviro Cap  Gatic

#### Equipment IDs

Water Quality Meter: YSI TTA Kit: \_\_\_\_\_

Pump: Low flow TALK Kit: \_\_\_\_\_

Dipper: Concrete QC Samples:  Yes  No ID: \_\_\_\_\_

Hydrocarbon Detected (Interface Meter: )  Yes  No If yes, depth of free product: \_\_\_\_\_

#### Sampling

Sample ID: WRMW3-04 COC No: E2012-031-007

Time	pH	EC	DO	Temp	Redox	TTA	TALK
8.50	7.44	8923	2.0	19.1	81.6		
8.55	7.07	848	3.3	20.5	36.1		
9.00	7.21	822	5.5	19.7	47.3		
9.02	7.20	832	5.6	20.5	50.1		

#### Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



## Monitoring Well Field Record

Job #: \_\_\_\_\_ Client: \_\_\_\_\_ Location: Waste/rock / Hazelmere  
 Well ID: MW4 Date: 3-6-13 Sampler: BV/DA

<b>Monitoring Well Information</b>							
Depth to Water:	<del>9879</del> <u>8872</u> (mm TOC)	Depth to Bottom:	<u>11,46</u> (m)				
Standpipe:	_____ (m)	Monument Cover	<input checked="" type="checkbox"/>				
Lock:	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Padlock (YL)	<input type="checkbox"/> Enviro Cap	<input type="checkbox"/> Gatic			
<b>Equipment IDs</b>							
Water Quality Meter:	<u>YSI</u>	TTA Kit:	_____				
Pump:	<u>low flow</u>	TALK Kit:	_____				
Dipper:	<u>Con site.</u>	QC Samples:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ID: <u>QC4/QC5</u>			
Hydrocarbon Detected (Interface Meter:) <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, depth of free product: _____							
<b>Sampling</b>							
Sample ID: <u>WRMW4-04</u>				COC No: <u>E2012-031-004</u>			
Time	pH	EC	DO	Temp	Redox	TTA	TALK
<u>10:46</u>	<u>5.84</u>	<u>135.3</u>	<u>5.3</u>	<u>20.4</u>	<u>165.6</u>		
<u>10:54</u>	<u>4.62</u>	<u>125.6</u>	<u>4.8</u>	<u>21.1</u>	<u>190.7</u>		
<u>10:58</u>	<u>4.58</u>	<u>118.7</u>	<u>4.9</u>	<u>21.0</u>	<u>197.0</u>		
<b>Comments</b>							
<u>QC4 (dup)</u>							
<del>QC5</del> <u>QC5 (trip)</u>							
Potential free hydrocarbon product - very minor could be less than a mil thick.							



ENVIRONMENTAL SERVICES

### Monitoring Well Field Record

Job #: \_\_\_\_\_ Client: \_\_\_\_\_ Location: WASTEROCK/HAZELMERE  
 Well ID: MWS Date: 3/6/13 Sampler: DA/BU

#### Monitoring Well Information

Depth to Water: 9322 (mm TOC)    Depth to Bottom: 12.375 (m)  
 Standpipe: \_\_\_\_\_ (m)    Monument Cover   
 Lock:  None     Padlock (YL)     Enviro Cap     Gatic

#### Equipment IDs

Water Quality Meter: WQM 1    TTA Kit: \_\_\_\_\_  
 Pump: LOW FLOW    TALK Kit: \_\_\_\_\_  
 Dipper: CONSISTENT    QC Samples:  Yes  No ID: \_\_\_\_\_  
 Hydrocarbon Detected (Interface Meter):  Yes  No If yes, depth of free product: \_\_\_\_\_

#### Sampling

Sample ID: ENRMWS-04    COC No: E2012-031-007

Time	pH	EC	DO	Temp	Redox	TTA	TALK
11:45	5.40	146.2	5.2	21.6	169.4		
11:50	5.22	147.2	3.1	21.9	170.6		
11:55	5.22	144.9	3.3	21.8	172.6		

#### Comments

~~tab QC (2x extra glass bottles)~~



ENVIRONMENTAL SERVICES

### Monitoring Well Field Record

Job #: \_\_\_\_\_ Client: \_\_\_\_\_ Location: WASTEDOCK / HAZELMERF  
 Well ID: MWG ~~1116~~ Date: 3/6/13 Sampler: DA/BV

Monitoring Well Information							
Depth to Water:	<u>9917</u> (mm TOC)	Depth to Bottom:	<u>9917</u> (m)				
Standpipe:	_____ (m)	Monument Cover	<input checked="" type="checkbox"/>				
Lock: <input type="checkbox"/> None	<input checked="" type="checkbox"/> Padlock (YL)	<input type="checkbox"/> Enviro Cap	<input type="checkbox"/> Gatic				
Equipment IDs							
Water Quality Meter:	<u>WQM 1</u>	TTA Kit:	_____				
Pump:	<u>LOW FLOW</u>	TALK Kit:	_____				
Dipper:	<u>CON SIDES</u>	QC Samples:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	ID:	_____	
Hydrocarbon Detected (Interface Meter:) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, depth of free product: _____							
Sampling							
Sample ID: <u>WRMWG-04</u>				COC No: <u>E2012-031-004</u>			
Time	pH	EC	DO	Temp	Redox	TTA	TALK
Comments							
<u>WELL DRY - NO SAMPLES COLLECTED</u>							



Field Quality Control Log

<b>Project No:</b>	E2012-031		
<b>Project Name:</b>	WATEROCK		
<b>Date Start:</b>	3/6/13		
<b>Date Ended:</b>	" "		
<b>Primary + Duplicate (Laboratory)</b>	ALS <input checked="" type="checkbox"/>	ARL <input type="checkbox"/>	Other: _____
<b>Triplicate (Laboratory)</b>	ALS <input type="checkbox"/>	ARL <input checked="" type="checkbox"/>	Other: _____

Field Personnel (initials) DA. \_\_\_\_\_

Matrix being Sampled

Soil       Groundwater       Other: \_\_\_\_\_

Project Manager (initials) \_\_\_\_\_

Air       Surface Water       \_\_\_\_\_

Field QC Sample ID	Sampling Date	Description
QC4	3/6/13	DUP OF ALS WRMW4-004
QC5	"	TRIP OF " "
QC6	"	BLANK
QC7	"	RINSTATE

## **Appendix C– Laboratory Results and Documentation**

Site: WASTEROCK  
 Job #: E2012-031  
 Sampler: DALE / BRONNIE  
 CoC#: E2012-031-007  
 Quote #: EP/284/12  
 Laboratory: ACS ENVIRO  
 Date and time delivered: 5/6/13 0920  
 Received by: M Westman



**ENVIRONMENTAL SERVICES**  
**Mobile Dewatering Environmental Services**  
 Unit 1, 22 Elmsfield Road  
 Midvale WA 6056  
 P: 08 9250 6960  
 F: 08 9250 8269  
 E: info@environmentalservices.com.au

Comments:  
 PLEASE CONTACT DALE (0424153646)  
 WITH ANY ISSUES.

Analysis Detection Limits

Sample ID	Lab ID	Type	Sampling		ASSET SUITE (2)
			Date	Time	
WRMW1-004	1	WATER	3/6/13	1200	✓
WRMW2-004	2				✓
WRMW3-004	3				✓
WRMW4-004	4				✓
WRMW5-004	5				✓
QC4	6				✓
QC5					
QC6	7				✓
QC7	8				✓

Environmental Division  
Perth

Work Order

**EP1304187**



Telephone : +61-8-9209 7655

Condition of Sample: Cool / Ambient / Warm

Relinquished by: DALE - A

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

**Work Order : EP1304187**

Client : **MOBILE DEWATERING**  
 Contact : INFO  
 Address : PO BOX 239  
 MIDLAND WA, AUSTRALIA 6939

Laboratory : Environmental Division Perth  
 Contact : Lauren Ockwell  
 Address : 10 Hod Way Malaga WA Australia 6090

E-mail : info@environmentalservices.com.au  
 Telephone : +61 08 9250 4995  
 Facsimile : ----

E-mail : lauren.ockwell@alsenviro.com  
 Telephone : 08 9209 7606  
 Facsimile : 08 9209 7600

Project : E2012-031  
 Order number : ----  
 C-O-C number : E2012-031-007  
 Site : WASTEROCK  
 Sampler : Dale/Bronnie

Page : 1 of 3  
 Quote number : EP2012MOBDEW0134 (EP/785/12)  
 QC Level : NEPM 1999 Schedule B(3) and ALS QCS3 requirement

#### Dates

Date Samples Received : 05-JUN-2013  
 Client Requested Due Date : 12-JUN-2013

Issue Date : 05-JUN-2013 12:28  
 Scheduled Reporting Date : **12-JUN-2013**

#### Delivery Details

Mode of Delivery : Carrier  
 No. of coolers/boxes : 3 Medium Hard Esky  
 Security Seal : Intact.

Temperature : 3.7 - Ice present  
 No. of samples received : 8  
 No. of samples analysed : 8

#### 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 see scanned COC for sample discrepancies: extra samples , samples not received etc.
- **Samples received in appropriately pretreated and preserved containers.**
- **COD analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911.**
- **pH analysis should be conducted within 6 hours of sampling.**
- Analytical work for this work order will be conducted at ALS Environmental Perth.
- Please direct any turnaround / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Sample Receipt (SamplesPerth@alsenviro.com)
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of Work Order.







Environmental Division

## CERTIFICATE OF ANALYSIS

Work Order	: <b>EP1304187</b>	Page	: 1 of 19
Client	: <b>MOBILE DEWATERING</b>	Laboratory	: Environmental Division Perth
Contact	: INFO	Contact	: Lauren Ockwell
Address	: PO BOX 239 MIDLAND WA, AUSTRALIA 6939	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: info@environmentalservices.com.au	E-mail	: lauren.ockwell@alsenviro.com
Telephone	: +61 08 9250 4995	Telephone	: 08 9209 7606
Facsimile	: ----	Facsimile	: 08 9209 7600
Project	: E2012-031	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 05-JUN-2013
C-O-C number	: E2012-031-007	Issue Date	: 12-JUN-2013
Sampler	: Dale/Bronnie	No. of samples received	: 8
Site	: WASTEROCK	No. of samples analysed	: 8
Quote number	: EP/785/12		

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

- **EG020: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods**
- **EG035T: Poor mercury matrix spike recovery due to matrix effects.**



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>
Agnes Szilagyi	Senior Organic Chemist	Perth Organics
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Benjamin Nicholson	Metals Chemist	Perth Inorganics
Chas Tucker	Inorganic Chemist	Perth Inorganics Perth Inorganics Perth Inorganics Perth Inorganics
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics
Scott James	Laboratory Manager	Perth Inorganics



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				WRMW1-004	WRMW2-004	WRMW3-004	WRMW4-004	WRMW5-004
				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00
				EP1304187-001	EP1304187-002	EP1304187-003	EP1304187-004	EP1304187-005
Compound	CAS Number	LOR	Unit					
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	6.69	5.57	7.79	5.64	6.19
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	882	371	886	117	134
<b>EA015: Total Dissolved Solids</b>								
Total Dissolved Solids @180°C	----	10	mg/L	500	221	640	96	118
<b>EA025: Suspended Solids</b>								
Suspended Solids (SS)	----	5	mg/L	604	154	5340	6	36
<b>EA045: Turbidity</b>								
Turbidity	----	0.1	NTU	203	96.6	9210	6.5	45.3
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	34	<1	136	<1	2
Total Alkalinity as CaCO3	----	1	mg/L	34	<1	136	<1	2
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	42	32	16	20	15
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	94	10	44	1	9
<b>ED045G: Chloride Discrete analyser</b>								
Chloride	16887-00-6	1	mg/L	182	89	155	17	25
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.04	0.03	0.03	0.11	0.06
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.004	0.002	0.056	0.003	0.002
Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.002	0.003	0.002
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.047	0.047	0.017	0.027	0.016
Iron	7439-89-6	0.05	mg/L	0.27	0.44	<0.05	<0.05	<0.05
<b>EG020T: Total Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	7.43	4.27	44.2	0.48	2.28
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.007	<0.001	<0.001



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				WRMW1-004	WRMW2-004	WRMW3-004	WRMW4-004	WRMW5-004
				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00
Compound	CAS Number	LOR	Unit	EP1304187-001	EP1304187-002	EP1304187-003	EP1304187-004	EP1304187-005
<b>EG020T: Total Metals by ICP-MS - Continued</b>								
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0002	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.006	0.005	0.071	<0.001	0.002
Copper	7440-50-8	0.001	mg/L	0.004	0.007	0.072	0.003	0.003
Lead	7439-92-1	0.001	mg/L	0.012	0.005	0.156	<0.001	0.003
Manganese	7439-96-5	0.001	mg/L	0.003	0.001	0.110	0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.004	0.003	0.024	0.002	0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	0.024	0.046	0.188	0.021	0.012
Iron	7439-89-6	0.05	mg/L	0.54	1.97	18.0	0.07	0.14
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0001	<0.0001	<0.0001
<b>EG050F: Dissolved Hexavalent Chromium</b>								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EG051G: Ferrous Iron by Discrete Analyser</b>								
Ferrous Iron	----	0.05	mg/L	0.25	0.44	<0.05	<0.05	<0.05
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.02	0.11	0.02	0.02
<b>EK057G: Nitrite as N by Discrete Analyser</b>								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EK058G: Nitrate as N by Discrete Analyser</b>								
Nitrate as N	14797-55-8	0.01	mg/L	0.32	0.84	0.18	4.91	1.90
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	0.32	0.84	0.18	4.91	1.90
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.2	0.6	<0.5	0.6
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>								
Total Nitrogen as N	----	0.1	mg/L	0.8	1.0	0.8	4.9	2.5
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
Total Phosphorus as P	----	0.01	mg/L	0.04	0.07	0.38	<0.01	0.02
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

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				WRMW1-004	WRMW2-004	WRMW3-004	WRMW4-004	WRMW5-004
				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00
Compound	CAS Number	LOR	Unit	EP1304187-001	EP1304187-002	EP1304187-003	EP1304187-004	EP1304187-005
<b>EK085M: Sulfide as S2-</b>								
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP026ST: Chemical Oxygen Demand (Sealed Tube)</b>								
Chemical Oxygen Demand	----	5	mg/L	18	<5	18	<5	<5
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	----	2	mg/L	<2	<2	6	<2	<2
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of DDD + DDE + DDT	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



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Sub-Matrix: WATER (Matrix: WATER)

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				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00
Compound	CAS Number	LOR	Unit	EP1304187-001	EP1304187-002	EP1304187-003	EP1304187-004	EP1304187-005
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
<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>								



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				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00
Compound	CAS Number	LOR	Unit	EP1304187-001	EP1304187-002	EP1304187-003	EP1304187-004	EP1304187-005
<b>EP074C: Sulfonated Compounds - Continued</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
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





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				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00
Compound	CAS Number	LOR	Unit	EP1304187-001	EP1304187-002	EP1304187-003	EP1304187-004	EP1304187-005
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
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
<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>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<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	<2.0	<2.0	<2.0	<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



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				WRMW1-004	WRMW2-004	WRMW3-004	WRMW4-004	WRMW5-004
				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00
Compound	CAS Number	LOR	Unit	EP1304187-001	EP1304187-002	EP1304187-003	EP1304187-004	EP1304187-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
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
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 (WHO)	----	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	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<b>200</b>	<100	<b>110</b>	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<b>100</b>	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<b>200</b>	<50	<b>210</b>	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	----	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<b>220</b>	<100	<b>180</b>	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<b>220</b>	<100	<b>180</b>	<100	<100
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				WRMW1-004	WRMW2-004	WRMW3-004	WRMW4-004	WRMW5-004
				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00
Compound	CAS Number	LOR	Unit	EP1304187-001	EP1304187-002	EP1304187-003	EP1304187-004	EP1304187-005
<b>EP080: BTEXN - Continued</b>								
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	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	88.0	98.0	94.1	86.8	105
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	76.6	87.9	83.5	80.9	96.8
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	101	100	91.0	87.1	102
Toluene-D8	2037-26-5	0.1	%	93.0	101	96.9	100	88.5
4-Bromofluorobenzene	460-00-4	0.1	%	88.8	92.3	91.0	86.8	88.1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	20.7	28.4	29.9	30.1	37.5
2-Chlorophenol-D4	93951-73-6	0.1	%	58.5	75.9	71.2	79.5	97.4
2,4,6-Tribromophenol	118-79-6	0.1	%	75.9	106	114	84.1	106
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	58.1	108	76.7	88.3	81.4
Anthracene-d10	1719-06-8	0.1	%	101	79.9	86.6	86.6	106
4-Terphenyl-d14	1718-51-0	0.1	%	120	85.9	99.8	117	102
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	108	107	99.5	97.2	109
Toluene-D8	2037-26-5	0.1	%	94.4	98.8	98.2	100	92.1
4-Bromofluorobenzene	460-00-4	0.1	%	92.9	93.4	93.7	90.1	93.2



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				QC4	QC6	QC7	---	---
				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	---	---
				EP1304187-006	EP1304187-007	EP1304187-008	---	---
Compound	CAS Number	LOR	Unit					
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	5.15	6.13	5.85	----	----
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	120	12	11	----	----
<b>EA015: Total Dissolved Solids</b>								
Total Dissolved Solids @180°C	----	10	mg/L	74	18	16	----	----
<b>EA025: Suspended Solids</b>								
Suspended Solids (SS)	----	5	mg/L	7	<5	<5	----	----
<b>EA045: Turbidity</b>								
Turbidity	----	0.1	NTU	4.6	0.3	<0.1	----	----
<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	<1	<1	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	<1	----	----
Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	<1	----	----
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	17	4	4	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2	<1	<1	----	----
<b>ED045G: Chloride Discrete analyser</b>								
Chloride	16887-00-6	1	mg/L	18	5	5	----	----
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.11	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	0.002	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	0.002	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	0.030	<0.005	<0.005	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	----	----
<b>EG020T: Total Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.48	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	<0.001	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				QC4	QC6	QC7	---	---
				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	---	---
				EP1304187-006	EP1304187-007	EP1304187-008	---	---
Compound	CAS Number	LOR	Unit					
<b>EG020T: Total Metals by ICP-MS - Continued</b>								
Cadmium	7440-43-9	0.0001	mg/L	0.0002	<0.0001	<0.0001	---	---
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	---	---
Copper	7440-50-8	0.001	mg/L	0.004	<0.001	<0.001	---	---
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	---	---
Manganese	7439-96-5	0.001	mg/L	0.002	<0.001	<0.001	---	---
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	---	---
Nickel	7440-02-0	0.001	mg/L	0.002	<0.001	<0.001	---	---
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	---	---
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	---	---
Zinc	7440-66-6	0.005	mg/L	0.020	<0.005	<0.005	---	---
Iron	7439-89-6	0.05	mg/L	0.06	<0.05	<0.05	---	---
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	---	---
<b>EG050F: Dissolved Hexavalent Chromium</b>								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	<0.01	---	---
<b>EG051G: Ferrous Iron by Discrete Analyser</b>								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	---	---
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	0.02	<0.01	<0.01	---	---
<b>EK057G: Nitrite as N by Discrete Analyser</b>								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	<0.01	---	---
<b>EK058G: Nitrate as N by Discrete Analyser</b>								
Nitrate as N	14797-55-8	0.01	mg/L	4.90	<0.01	<0.01	---	---
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	4.90	<0.01	<0.01	---	---
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.5	<0.1	<0.1	---	---
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>								
^ Total Nitrogen as N	----	0.1	mg/L	4.9	<0.1	<0.1	---	---
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	---	---
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	---	---



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

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				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	---	---
				EP1304187-006	EP1304187-007	EP1304187-008	---	---
Compound	CAS Number	LOR	Unit					
<b>EK085M: Sulfide as S2-</b>								
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	---	---
<b>EP026ST: Chemical Oxygen Demand (Sealed Tube)</b>								
Chemical Oxygen Demand	----	5	mg/L	<5	<5	<5	---	---
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	----	2	mg/L	3	<2	<2	---	---
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	<0.5	---	---
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	<0.5	---	---
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	<0.5	---	---
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	<0.5	---	---
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	---	---
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	---	---
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	---	---
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	<0.5	<0.5	---	---
^ Sum of DDD + DDE + DDT	----	0.5	µg/L	<0.5	<0.5	<0.5	---	---
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	---	---
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				QC4	QC6	QC7	---	---
				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	---	---
				EP1304187-006	EP1304187-007	EP1304187-008	---	---
Compound	CAS Number	LOR	Unit					
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>								
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	---	---
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	---	---
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	---	---
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	---	---
<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	---	---
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	---	---
<b>EP074C: Sulfonated Compounds</b>								



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

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Client sampling date / time

				QC4	QC6	QC7	---	---
				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	---	---
				EP1304187-006	EP1304187-007	EP1304187-008	---	---
Compound	CAS Number	LOR	Unit					
<b>EP074C: Sulfonated Compounds - Continued</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	---	---
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	---	---





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				QC4	QC6	QC7	---	---
				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	---	---
				EP1304187-006	EP1304187-007	EP1304187-008	---	---
Compound	CAS Number	LOR	Unit					
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
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>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	<1.0	<1.0	---	---
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	---	---



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				QC4	QC6	QC7	---	---
				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	---	---
				EP1304187-006	EP1304187-007	EP1304187-008	---	---
Compound	CAS Number	LOR	Unit					
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	---	---
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	<0.5	<0.5	<0.5	---	---
^ Benzo(a)pyrene TEQ (WHO)	----	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	<100	<100	<100	---	---
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	---	---
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	20	µg/L	<20	<20	<20	---	---
^ C6 - C10 Fraction minus BTEX (F1)	----	20	µg/L	<20	<20	<20	---	---
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	---	---
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	---	---
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	---	---
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	---	---
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	<1	<1	---	---
Toluene	108-88-3	2	µg/L	<2	<2	<2	---	---
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	---	---



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				QC4	QC6	QC7	---	---
				04-JUN-2013 12:00	04-JUN-2013 12:00	04-JUN-2013 12:00	---	---
				EP1304187-006	EP1304187-007	EP1304187-008	---	---
Compound	CAS Number	LOR	Unit					
<b>EP080: BTEXN - Continued</b>								
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	---	---
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	---	---
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	---	---
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	---	---
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	---	---
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	96.5	90.7	99.1	---	---
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	89.5	84.8	91.6	---	---
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	92.9	97.5	103	---	---
Toluene-D8	2037-26-5	0.1	%	98.2	100	95.9	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	87.9	91.0	91.3	---	---
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	25.9	27.9	37.7	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	76.1	83.5	94.1	---	---
2,4,6-Tribromophenol	118-79-6	0.1	%	82.0	90.7	98.2	---	---
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	79.8	89.3	103	---	---
Anthracene-d10	1719-06-8	0.1	%	92.9	90.8	101	---	---
4-Terphenyl-d14	1718-51-0	0.1	%	106	102	115	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	99.9	102	109	---	---
Toluene-D8	2037-26-5	0.1	%	96.1	98.2	96.6	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	93.8	90.7	93.6	---	---



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
Dibromo-DDE	21655-73-2	38	129
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
DEF	78-48-8	35	135
<b>EP074S: VOC Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	62.3	133.9
Toluene-D8	2037-26-5	74.5	124.3
4-Bromofluorobenzene	460-00-4	63.9	118.5
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	15.8	70
2-Chlorophenol-D4	93951-73-6	10	113
2,4,6-Tribromophenol	118-79-6	26	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	32	122
Anthracene-d10	1719-06-8	39	127
4-Terphenyl-d14	1718-51-0	37	137
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	60.5	141.2
Toluene-D8	2037-26-5	73.4	126
4-Bromofluorobenzene	460-00-4	59.6	125.3

## QUALITY CONTROL REPORT

Work Order	: <b>EP1304187</b>	Page	: 1 of 21
Client	: <b>MOBILE DEWATERING</b>	Laboratory	: Environmental Division Perth
Contact	: INFO	Contact	: Lauren Ockwell
Address	: PO BOX 239 MIDLAND WA, AUSTRALIA 6939	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: info@environmentalservices.com.au	E-mail	: lauren.ockwell@alsenviro.com
Telephone	: +61 08 9250 4995	Telephone	: 08 9209 7606
Facsimile	: ----	Facsimile	: 08 9209 7600
Project	: E2012-031	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: WASTEROCK	Date Samples Received	: 05-JUN-2013
C-O-C number	: E2012-031-007	Issue Date	: 12-JUN-2013
Sampler	: Dale/Bronnie	No. of samples received	: 8
Order number	: ----	No. of samples analysed	: 8
Quote number	: EP/785/12		

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>
Agnes Szilagyi	Senior Organic Chemist	Perth Organics
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Benjamin Nicholson	Metals Chemist	Perth Inorganics
Chas Tucker	Inorganic Chemist	Perth Inorganics Perth Inorganics Perth Inorganics Perth Inorganics
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics
Scott James	Laboratory Manager	Perth Inorganics



## 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>EA005P: pH by PC Titrator (QC Lot: 2903340)</b>									
EP1304185-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.15	7.00	2.1	0% - 20%
EP1304187-004	WRMW4-004	EA005-P: pH Value	----	0.01	pH Unit	5.64	5.35	5.3	0% - 20%
<b>EA010P: Conductivity by PC Titrator (QC Lot: 2903341)</b>									
EP1304185-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	106	104	1.6	0% - 20%
EP1304187-004	WRMW4-004	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	117	118	0.0	0% - 20%
<b>EA015: Total Dissolved Solids (QC Lot: 2904685)</b>									
EP1304185-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	152	146	3.7	0% - 50%
EP1304187-006	QC4	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	74	70	4.8	No Limit
<b>EA025: Suspended Solids (QC Lot: 2904686)</b>									
EP1304185-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	106	124	15.6	0% - 20%
EP1304187-008	QC7	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
<b>EA045: Turbidity (QC Lot: 2902954)</b>									
EP1304185-001	Anonymous	EA045: Turbidity	----	0.1	NTU	129	128	0.8	0% - 20%
EP1304187-008	QC7	EA045: Turbidity	----	0.1	NTU	<0.1	<0.1	0.0	No Limit
<b>ED037P: Alkalinity by PC Titrator (QC Lot: 2903339)</b>									
EP1304185-001	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	12	12	0.0	0% - 50%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	12	12	0.0	0% - 50%
EP1304187-004	WRMW4-004	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	<1	<1	0.0	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.0	No Limit
<b>ED038A: Acidity (QC Lot: 2909581)</b>									
EP1304185-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	6	8	28.6	No Limit
EP1304187-004	WRMW4-004	ED038: Acidity as CaCO3	----	1	mg/L	20	19	5.1	0% - 20%
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2903853)</b>									
EP1304184-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	98	98	0.0	0% - 20%
EP1304187-004	WRMW4-004	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1	2	61.7	No Limit
<b>ED045G: Chloride Discrete analyser (QC Lot: 2903852)</b>									
EP1304184-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	78	80	2.6	0% - 20%
EP1304187-004	WRMW4-004	ED045G: Chloride	16887-00-6	1	mg/L	17	17	0.0	0% - 50%
<b>EG020F: Dissolved Metals by ICP-MS (QC Lot: 2907457)</b>									
EP1304185-001	Anonymous	EG020A-F: 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>EG020F: Dissolved Metals by ICP-MS (QC Lot: 2907457) - continued</b>									
EP1304185-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.006	0.006	0.0	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.29	0.31	6.2	0% - 20%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.14	0.14	0.0	No Limit
EP1304187-008	QC7	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit		
<b>EG020T: Total Metals by ICP-MS (QC Lot: 2905216)</b>									
EP1304152-013	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: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	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	<0.001	<0.001	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: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
		EP1304177-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001
EG020A-T: Arsenic	7440-38-2			0.001	mg/L	0.003	0.003	0.0	No Limit
EG020A-T: Chromium	7440-47-3			0.001	mg/L	0.001	0.001	0.0	No Limit
EG020A-T: Copper	7440-50-8			0.001	mg/L	<0.001	<0.001	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	0.069	0.068	0.0	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: Aluminium	7429-90-5			0.01	mg/L	0.36	0.36	0.0	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>EG020T: Total Metals by ICP-MS (QC Lot: 2905216) - continued</b>									
EP1304177-002	Anonymous	EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	1.46	1.47	0.0	0% - 20%
<b>EG020T: Total Metals by ICP-MS (QC Lot: 2905217)</b>									
EP1304187-004	WRMW4-004	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
<b>EG020T: Total Metals by ICP-MS (QC Lot: 2905218)</b>									
EP1304187-004	WRMW4-004	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: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.003	0.004	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	0.001	0.002	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	0.002	0.002	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.021	0.020	0.0	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.48	0.42	12.0	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.07	0.07	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2905241)</b>									
EP1304112-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP1304137-002	Anonymous	EG035T: 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: 2905242)</b>									
EP1304187-004	WRMW4-004	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
<b>EG050F: Dissolved Hexavalent Chromium (QC Lot: 2904122)</b>									
EP1304185-001	Anonymous	EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP1304187-007	QC6	EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.0	No Limit
<b>EG051G: Ferrous Iron by Discrete Analyser (QC Lot: 2903510)</b>									
EP1304205-001	Anonymous	EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EP1304187-007	QC6	EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	0.0	No Limit
<b>EK055G: Ammonia as N by Discrete Analyser (QC Lot: 2903709)</b>									
EP1303820-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.13	0.12	10.6	0% - 50%
EP1304187-003	WRMW3-004	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.11	0.11	0.0	0% - 50%
<b>EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2903850)</b>									
EP1304184-001	Anonymous	EK057G: Nitrite as N	----	0.01	mg/L	0.04	0.04	0.0	No Limit
EP1304187-004	WRMW4-004	EK057G: Nitrite as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 2903708)</b>									
EP1303820-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.96	0.96	0.0	0% - 20%
EP1304187-003	WRMW3-004	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.18	0.18	0.0	0% - 50%
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 2906659)</b>									



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>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 2906659) - continued</b>									
EP1304185-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.3	0.0	No Limit
<b>EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 2906660)</b>									
EP1304185-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.11	0.10	0.0	0% - 50%
EP1304187-004	WRMW4-004	EK067G: Total Phosphorus as P	----	0.01	mg/L	----	<0.01	# Not Determined	No Limit
<b>EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 2903851)</b>									
EP1304184-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.05	0.05	0.0	No Limit
EP1304187-004	WRMW4-004	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
<b>EK085M: Sulfide as S2- (QC Lot: 2910766)</b>									
EP1304185-001	Anonymous	EK085: Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EP1304187-007	QC6	EK085: Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
<b>EP026ST: Chemical Oxygen Demand (Sealed Tube) (QC Lot: 2910011)</b>									
EP1304154-001	Anonymous	EP026ST: Chemical Oxygen Demand	----	5	mg/L	30	27	10.5	No Limit
EP1304187-007	QC6	EP026ST: Chemical Oxygen Demand	----	5	mg/L	<5	<5	0.0	No Limit
<b>EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 2903124)</b>									
EP1304138-001	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	7	2	102	No Limit
EP1304187-007	QC6	EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	<2	0.0	No Limit
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 2906752)</b>									
EP1304187-004	WRMW4-004	EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP068: Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	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>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2906752)</b>									
EP1304187-004	WRMW4-004	EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
EP068: Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	0.0	No Limit		
EP068: Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	0.0	No Limit		
EP068: Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	0.0	No Limit		
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 2907160)</b>									
EP1304187-001	WRMW1-004	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: 2907160)</b>									
EP1304187-001	WRMW1-004	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: 2907160)</b>									
EP1304187-001	WRMW1-004	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
<b>EP074D: Fumigants (QC Lot: 2907160)</b>									
EP1304187-001	WRMW1-004	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



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: 2907160) - continued</b>									
EP1304187-001	WRMW1-004	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: 2907160)</b>									
EP1304187-001	WRMW1-004	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: 2907160)</b>									
EP1304187-001	WRMW1-004	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



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: 2907160) - continued</b>									
EP1304187-001	WRMW1-004	EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
<b>EP074G: Trihalomethanes (QC Lot: 2907160)</b>									
EP1304187-001	WRMW1-004	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>EP075(SIM)A: Phenolic Compounds (QC Lot: 2906751)</b>									
EP1304187-004	WRMW4-004	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
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2906751)</b>									
EP1304187-004	WRMW4-004	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: 2906750)</b>							
EP1304187-004	WRMW4-004	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

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 Work Order : EP1304187  
 Client : MOBILE DEWATERING  
 Project : E2012-031



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: 2907161)</b>										
EP1304187-001	WRMW1-004	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2906750)</b>										
EP1304187-004	WRMW4-004	EP071: >C10 - C16 Fraction	----	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 2010 Draft (QC Lot: 2907161)</b>										
EP1304187-001	WRMW1-004	EP080: C6 - C10 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 2907161)</b>										
EP1304187-001	WRMW1-004	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>EA005P: pH by PC Titrator (QCLot: 2903340)</b>									
EA005-P: pH Value	----	0.01	pH Unit	----	7.00 pH Unit	101	70	130	
<b>EA010P: Conductivity by PC Titrator (QCLot: 2903341)</b>									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	100	90	110	
<b>EA015: Total Dissolved Solids (QCLot: 2904685)</b>									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	93.8	70	130	
<b>EA025: Suspended Solids (QCLot: 2904686)</b>									
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	95.0	70	130	
<b>EA045: Turbidity (QCLot: 2902954)</b>									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	95.2	91	107	
<b>ED037P: Alkalinity by PC Titrator (QCLot: 2903339)</b>									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	200 mg/L	108	87	121	
<b>ED038A: Acidity (QCLot: 2909581)</b>									
ED038: Acidity as CaCO3	----	1	mg/L	----	20 mg/L	106	85	119	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2903853)</b>									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	91.4	88	121	
<b>ED045G: Chloride Discrete analyser (QCLot: 2903852)</b>									
ED045G: Chloride	16887-00-6	1	mg/L	<1	1000 mg/L	97.7	84	120	
<b>EG020F: Dissolved Metals by ICP-MS (QCLot: 2907457)</b>									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.50 mg/L	90.6	77	113	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	97.8	89	109	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1000 mg/L	99.0	89	109	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	103	88	106	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.100 mg/L	101	87	107	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	100	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.10 mg/L	94.9	93	117	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.100 mg/L	97.3	89	115	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.50 mg/L	108	83	109	
<b>EG020T: Total Metals by ICP-MS (QCLot: 2905216)</b>									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	96.0	78	116	



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>EG020T: Total Metals by ICP-MS (QCLot: 2905216) - continued</b>									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.4	77	109	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.3	78	108	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.4	80	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.2	79	111	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.3	81	109	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	104	80	112	
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	104	86	118	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	100	80	112	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	102	75	107	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	93.2	74	108	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	102	75	115	
<b>EG020T: Total Metals by ICP-MS (QCLot: 2905217)</b>									
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.01 mg/L	103	70	130	
<b>EG020T: Total Metals by ICP-MS (QCLot: 2905218)</b>									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	99.8	78	116	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	91.9	77	109	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.7	78	108	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.2	80	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.4	79	111	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.7	81	109	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	101	80	112	
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	105	86	118	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.9	80	112	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	104	75	107	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.4	74	108	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	102	75	115	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 2905241)</b>									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	102	82.3	118	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 2905242)</b>									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	101	82.3	118	
<b>EG050F: Dissolved Hexavalent Chromium (QCLot: 2904122)</b>									
EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	97.9	91	115	
<b>EG051G: Ferrous Iron by Discrete Analyser (QCLot: 2903510)</b>									
EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	2.00 mg/L	101	89	113	
<b>EK055G: Ammonia as N by Discrete Analyser (QCLot: 2903709)</b>									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	99.6	87	115	
<b>EK057G: Nitrite as N by Discrete Analyser (QCLot: 2903850)</b>									
EK057G: Nitrite as N	----	0.01	mg/L	<0.01	0.5 mg/L	95.6	86	112	





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>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2903708)</b>								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.7	92	112
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 2906659)</b>								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	98.6	74	130
<b>EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 2906660)</b>								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	90.8	70	130
<b>EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 2903851)</b>								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	102	87	115
<b>EK085M: Sulfide as S2- (QCLot: 2910766)</b>								
EK085: Sulfide as S2-	18496-25-8	0.10	mg/L	<0.1	0.50 mg/L	92.0	82	116
<b>EP026ST: Chemical Oxygen Demand (Sealed Tube) (QCLot: 2910011)</b>								
EP026ST: Chemical Oxygen Demand	----	5	mg/L	<5	500 mg/L	96.9	88	114
<b>EP030: Biochemical Oxygen Demand (BOD) (QCLot: 2903124)</b>								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	198 mg/L	85.8	84	114
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 2906752)</b>								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	95.6	59	123
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	90.2	53	120
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	69.4	58	127
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	123	59	129
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	104	58	127
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	101	55	119
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	108	60	125
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	101	58	126
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	101	59	125
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	109	51	135
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	101	60	125
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	104	59	134
EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	102	61	127
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	74.6	62	130
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	110	63	132
EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	105	61	128
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	124	40	144
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	104	44	134
EP068: 4,4'-DDT	50-29-3	2.0	µg/L	<2.0	5 µg/L	101	38	118
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	121	46	132
EP068: Methoxychlor	72-43-5	2.0	µg/L	<2.0	5 µg/L	121	33	123
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2906752)</b>								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	92.2	37	109
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	98.5	36	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>EP068B: Organophosphorus Pesticides (OP) (QCLot: 2906752) - continued</b>									
EP068: Monocrotophos	6923-22-4	2.0	µg/L	<2.0	5 µg/L	10.2	10	28.2	
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	86.8	49	113	
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	105	61	125	
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	96.6	63	120	
EP068: Parathion-methyl	298-00-0	2.0	µg/L	<2.0	5 µg/L	106	47	118	
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	99.6	45	129	
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	99.4	60	121	
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	102	47	127	
EP068: Parathion	56-38-2	2.0	µg/L	<2.0	5 µg/L	110	55	122	
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	97.4	59	125	
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	100	61	125	
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	102	61	120	
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	89.1	59	127	
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	100	49	121	
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	98.9	45	123	
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	97.2	46	126	
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	98.9	26.9	147	
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2907160)</b>									
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	96.3	74	124	
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	111	75	121	
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	104	72	122	
EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	107	73	121	
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	105	72	122	
EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	107	74	122	
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	108	73	121	
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	105	73	123	
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	104	70	126	
<b>EP074B: Oxygenated Compounds (QCLot: 2907160)</b>									
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	87.8	61	135	
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	98.8	66	130	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	96.8	72	126	
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	# Not Determined	70	126	
<b>EP074C: Sulfonated Compounds (QCLot: 2907160)</b>									
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	110	71	127	
<b>EP074D: Fumigants (QCLot: 2907160)</b>									
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	109	71	129	
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	109	74	124	
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	97.2	73	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>EP074D: Fumigants (QCLot: 2907160) - continued</b>									
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	107	70	130	
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	106	74	124	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 2907160)</b>									
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	112	70	130	
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	103	73	125	
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	96.7	72	128	
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	112	73	127	
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	113	74	124	
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	124	72	130	
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	112	73	129	
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	66.6	42	142	
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	116	72	126	
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	103	73	125	
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	103	76	122	
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	120	76	124	
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	115	74	124	
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	115	73	129	
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	117	76	126	
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	109	75	125	
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	120	75	127	
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	107	74	122	
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	101	72	128	
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	116	74	124	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	----	----	----	----	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	96.5	54	142	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	102	61	135	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	110	66	132	
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	99.0	66	130	
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	102	66	134	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	89.7	56	140	
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	107	66	134	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 2907160)</b>									
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	98.1	78	120	
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	102	76	122	
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	101	75	121	
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	98.7	74	122	
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	101	75	121	
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	100	75	121	
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	103	76	122	



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>EP074F: Halogenated Aromatic Compounds (QCLot: 2907160) - continued</b>									
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	91.0	68	132	
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	96.2	72	128	
<b>EP074G: Trihalomethanes (QCLot: 2907160)</b>									
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	103	75	125	
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	106	73	129	
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	102	68	132	
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	98.0	67	133	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 2906751)</b>									
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	39.5	10	60	
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	86.3	23	117	
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	78.2	19.2	110	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	34.3	10	101	
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	93.3	20.3	142	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	86.2	25.3	116	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	88.2	24.8	128	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	87.0	33	128	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	84.6	33	124	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	84.5	23	126	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	88.2	32	134	
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	5 µg/L	110	22.8	145	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2906751)</b>									
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	92.1	27.5	126	
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	67.2	35	127	
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	86.8	35	128	
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	73.7	36	132	
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	93.5	42	132	
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	101	42	133	
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	109	41	137	
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	99.0	40	140	
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	74.3	33	147	
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	75.1	37	145	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	119	35	150	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	114	39	140	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	126	41	138	
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	72.3	35	139	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	71.8	36	141	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	55.5	10	140	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2906750)</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>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2906750) - continued</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3610 µg/L	91.2	64	124	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	10340 µg/L	99.5	70	130	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	3790 µg/L	96.1	68	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907161)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	320 µg/L	95.2	74.2	142	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2906750)</b>									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5070 µg/L	96.4	70	130	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	11230 µg/L	109	70	130	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1010 µg/L	90.2	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2907161)</b>									
EP080: C6 - C10 Fraction	----	20	µg/L	<20	370 µg/L	95.9	74.2	142	
<b>EP080: BTEXN (QCLot: 2907161)</b>									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	94.7	72.6	122	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	93.5	71.1	123	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	96.3	71.9	121	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	95.1	72.3	122	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	96.8	72.3	121	
EP080: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	84.3	78.8	121	

### 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 (%)		Recovery Limits (%)	
					MS	Low	High	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2903853)</b>								
EP1304184-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	92.8	70	130	
<b>ED045G: Chloride Discrete analyser (QCLot: 2903852)</b>								
EP1304184-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	93.6	70	130	
<b>EG020F: Dissolved Metals by ICP-MS (QCLot: 2907457)</b>								
EP1304185-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.200 mg/L	104	70	130	
		EG020A-F: Cadmium	7440-43-9	0.0500 mg/L	109	70	130	
		EG020A-F: Chromium	7440-47-3	0.200 mg/L	97.8	70	130	
		EG020A-F: Manganese	7439-96-5	0.200 mg/L	92.9	70	130	
		EG020A-F: Nickel	7440-02-0	0.200 mg/L	94.2	70	130	
		EG020A-F: Zinc	7440-66-6	0.200 mg/L	102	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>EG020T: Total Metals by ICP-MS (QCLot: 2905216)</b>							
EP1304152-014	Anonymous	EG020A-T: Arsenic	7440-38-2	1.00 mg/L	91.3	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	94.5	70	130
		EG020A-T: Chromium	7440-47-3	1.00 mg/L	87.0	70	130
		EG020A-T: Copper	7440-50-8	1.00 mg/L	90.6	70	130
		EG020A-T: Lead	7439-92-1	1.00 mg/L	95.5	70	130
		EG020A-T: Manganese	7439-96-5	1.00 mg/L	95.5	70	130
		EG020A-T: Nickel	7440-02-0	1.00 mg/L	93.3	70	130
		EG020A-T: Zinc	7440-66-6	1.00 mg/L	92.3	70	130
<b>EG020T: Total Metals by ICP-MS (QCLot: 2905218)</b>							
EP1304187-005	WRMW5-004	EG020A-T: Arsenic	7440-38-2	1.00 mg/L	92.1	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	98.3	70	130
		EG020A-T: Chromium	7440-47-3	1.00 mg/L	82.0	70	130
		EG020A-T: Copper	7440-50-8	1.00 mg/L	89.7	70	130
		EG020A-T: Lead	7439-92-1	1.00 mg/L	98.6	70	130
		EG020A-T: Manganese	7439-96-5	1.00 mg/L	88.8	70	130
		EG020A-T: Nickel	7440-02-0	1.00 mg/L	90.2	70	130
		EG020A-T: Zinc	7440-66-6	1.00 mg/L	93.1	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 2905241)</b>							
EP1304112-002	Anonymous	EG035T: Mercury	7439-97-6	0.0100 mg/L	# 21.5	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 2905242)</b>							
EP1304187-005	WRMW5-004	EG035T: Mercury	7439-97-6	0.0100 mg/L	95.8	70	130
<b>EG050F: Dissolved Hexavalent Chromium (QCLot: 2904122)</b>							
EP1304185-001	Anonymous	EG050G-F: Hexavalent Chromium	18540-29-9	0.5 mg/L	74.6	70	130
<b>EG051G: Ferrous Iron by Discrete Analyser (QCLot: 2903510)</b>							
EP1304205-001	Anonymous	EG051G: Ferrous Iron	----	2.5 mg/L	103	70	130
<b>EK055G: Ammonia as N by Discrete Analyser (QCLot: 2903709)</b>							
EP1303820-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1.00 mg/L	101	70	130
<b>EK057G: Nitrite as N by Discrete Analyser (QCLot: 2903850)</b>							
EP1304184-001	Anonymous	EK057G: Nitrite as N	----	0.5 mg/L	98.8	70	130
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2903708)</b>							
EP1303820-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	91.6	70	130
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 2906659)</b>							
EP1304185-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5.0 mg/L	94.6	70	130
<b>EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 2906660)</b>							
EP1304185-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	97.8	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>EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 2903851)</b>							
EP1304184-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	95.2	70	130
<b>EP026ST: Chemical Oxygen Demand (Sealed Tube) (QCLot: 2910011)</b>							
EP1304154-001	Anonymous	EP026ST: Chemical Oxygen Demand	----	333 mg/L	119	70	130
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 2907160)</b>							
EP1304187-002	WRMW2-004	EP074: 1,1-Dichloroethene	75-35-4	80 µg/L	82.3	73.7	126
		EP074: Trichloroethene	79-01-6	80 µg/L	93.8	79.1	120
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 2907160)</b>							
EP1304187-002	WRMW2-004	EP074: Chlorobenzene	108-90-7	80 µg/L	84.4	81.4	115
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 2906751)</b>							
EP1304187-004	WRMW4-004	EP075(SIM): Phenol	108-95-2	5 µg/L	31.5	10	66
		EP075(SIM): 2-Chlorophenol	95-57-8	5 µg/L	63.7	16.3	120
		EP075(SIM): 2-Nitrophenol	88-75-5	5 µg/L	79.3	18.4	144
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	5 µg/L	73.4	22.5	129
		EP075(SIM): Pentachlorophenol	87-86-5	5 µg/L	80.1	23.5	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2906751)</b>							
EP1304187-004	WRMW4-004	EP075(SIM): Acenaphthene	83-32-9	5 µg/L	73.8	25.2	131
		EP075(SIM): Pyrene	129-00-0	5 µg/L	84.1	30.8	143
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907161)</b>							
EP1304187-002	WRMW2-004	EP080: C6 - C9 Fraction	----	1120 µg/L	80.1	77.0	137
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2907161)</b>							
EP1304187-002	WRMW2-004	EP080: C6 - C10 Fraction	----	1320 µg/L	84.6	77.0	137
<b>EP080: BTEXN (QCLot: 2907161)</b>							
EP1304187-002	WRMW2-004	EP080: Benzene	71-43-2	80 µg/L	91.9	77.0	122
		EP080: Toluene	108-88-3	80 µg/L	86.7	73.5	126

### 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>EG051G: Ferrous Iron by Discrete Analyser (QCLot: 2903510)</b>											
EP1304205-001	Anonymous	EG051G: Ferrous Iron	----	2.5 mg/L	103	----	70	130	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2903708)</b>											
EP1303820-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	91.6	----	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>EK055G: Ammonia as N by Discrete Analyser (QCLot: 2903709)</b>										
EP1303820-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1.00 mg/L	101	----	70	130	----	----
<b>EK057G: Nitrite as N by Discrete Analyser (QCLot: 2903850)</b>										
EP1304184-001	Anonymous	EK057G: Nitrite as N	----	0.5 mg/L	98.8	----	70	130	----	----
<b>EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 2903851)</b>										
EP1304184-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	95.2	----	70	130	----	----
<b>ED045G: Chloride Discrete analyser (QCLot: 2903852)</b>										
EP1304184-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	93.6	----	70	130	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2903853)</b>										
EP1304184-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	92.8	----	70	130	----	----
<b>EG050F: Dissolved Hexavalent Chromium (QCLot: 2904122)</b>										
EP1304185-001	Anonymous	EG050G-F: Hexavalent Chromium	18540-29-9	0.5 mg/L	74.6	----	70	130	----	----
<b>EG020T: Total Metals by ICP-MS (QCLot: 2905216)</b>										
EP1304152-014	Anonymous	EG020A-T: Arsenic	7440-38-2	1.00 mg/L	91.3	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	94.5	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1.00 mg/L	87.0	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1.00 mg/L	90.6	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1.00 mg/L	95.5	----	70	130	----	----
		EG020A-T: Manganese	7439-96-5	1.00 mg/L	95.5	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1.00 mg/L	93.3	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1.00 mg/L	92.3	----	70	130	----	----
<b>EG020T: Total Metals by ICP-MS (QCLot: 2905218)</b>										
EP1304187-005	WRMW5-004	EG020A-T: Arsenic	7440-38-2	1.00 mg/L	92.1	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	98.3	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1.00 mg/L	82.0	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1.00 mg/L	89.7	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1.00 mg/L	98.6	----	70	130	----	----
		EG020A-T: Manganese	7439-96-5	1.00 mg/L	88.8	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1.00 mg/L	90.2	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1.00 mg/L	93.1	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 2905241)</b>										
EP1304112-002	Anonymous	EG035T: Mercury	7439-97-6	0.0100 mg/L	# 21.5	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 2905242)</b>										
EP1304187-005	WRMW5-004	EG035T: Mercury	7439-97-6	0.0100 mg/L	95.8	----	70	130	----	----
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 2906659)</b>										
EP1304185-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5.0 mg/L	94.6	----	70	130	----	----
<b>EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 2906660)</b>										
EP1304185-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	97.8	----	70	130	----	----



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 Work Order : EP1304187  
 Client : MOBILE DEWATERING  
 Project : E2012-031



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>EP075(SIM)A: Phenolic Compounds (QCLot: 2906751)</b>										
EP1304187-004	WRMW4-004	EP075(SIM): Phenol	108-95-2	5 µg/L	31.5	----	10	66	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	5 µg/L	63.7	----	16.3	120	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	5 µg/L	79.3	----	18.4	144	----	----
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	5 µg/L	73.4	----	22.5	129	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	5 µg/L	80.1	----	23.5	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2906751)</b>										
EP1304187-004	WRMW4-004	EP075(SIM): Acenaphthene	83-32-9	5 µg/L	73.8	----	25.2	131	----	----
		EP075(SIM): Pyrene	129-00-0	5 µg/L	84.1	----	30.8	143	----	----
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 2907160)</b>										
EP1304187-002	WRMW2-004	EP074: 1,1-Dichloroethene	75-35-4	80 µg/L	82.3	----	73.7	126	----	----
		EP074: Trichloroethene	79-01-6	80 µg/L	93.8	----	79.1	120	----	----
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 2907160)</b>										
EP1304187-002	WRMW2-004	EP074: Chlorobenzene	108-90-7	80 µg/L	84.4	----	81.4	115	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907161)</b>										
EP1304187-002	WRMW2-004	EP080: C6 - C9 Fraction	----	1120 µg/L	80.1	----	77.0	137	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2907161)</b>										
EP1304187-002	WRMW2-004	EP080: C6 - C10 Fraction	----	1320 µg/L	84.6	----	77.0	137	----	----
<b>EP080: BTEXN (QCLot: 2907161)</b>										
EP1304187-002	WRMW2-004	EP080: Benzene	71-43-2	80 µg/L	91.9	----	77.0	122	----	----
		EP080: Toluene	108-88-3	80 µg/L	86.7	----	73.5	126	----	----
<b>EG020F: Dissolved Metals by ICP-MS (QCLot: 2907457)</b>										
EP1304185-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.200 mg/L	104	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.0500 mg/L	109	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.200 mg/L	97.8	----	70	130	----	----
		EG020A-F: Manganese	7439-96-5	0.200 mg/L	92.9	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.200 mg/L	94.2	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.200 mg/L	102	----	70	130	----	----
<b>EP026ST: Chemical Oxygen Demand (Sealed Tube) (QCLot: 2910011)</b>										
EP1304154-001	Anonymous	EP026ST: Chemical Oxygen Demand	----	333 mg/L	119	----	70	130	----	----

Environmental Division

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: EP1304187	Page	: 1 of 15
Client	: MOBILE DEWATERING	Laboratory	: Environmental Division Perth
Contact	: INFO	Contact	: Lauren Ockwell
Address	: PO BOX 239 MIDLAND WA, AUSTRALIA 6939	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: info@environmentalservices.com.au	E-mail	: lauren.ockwell@alsenviro.com
Telephone	: +61 08 9250 4995	Telephone	: 08 9209 7606
Facsimile	: ----	Facsimile	: 08 9209 7600
Project	: E2012-031	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: WASTEROCK	Date Samples Received	: 05-JUN-2013
C-O-C number	: E2012-031-007	Issue Date	: 12-JUN-2013
Sampler	: Dale/Bronnie	No. of samples received	: 8
Order number	: ----	No. of samples analysed	: 8
Quote number	: EP/785/12		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

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

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

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>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6, WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	04-JUN-2013	----	05-JUN-2013	04-JUN-2013	✘	
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6, WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	02-JUL-2013	----	05-JUN-2013	02-JUL-2013	✓	
<b>EA015: Total Dissolved Solids</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6, WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	11-JUN-2013	----	06-JUN-2013	11-JUN-2013	✓	
<b>EA025: Suspended Solids</b>								
<b>Clear Plastic Bottle - Natural (EA025H)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6, WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	11-JUN-2013	----	06-JUN-2013	11-JUN-2013	✓	
<b>EA045: Turbidity</b>								
<b>Clear Plastic Bottle - Natural (EA045)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6, WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	----	----	----	05-JUN-2013	05-JUN-2013	✓	



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>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	18-JUN-2013	----	05-JUN-2013	18-JUN-2013	✓
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	----	----	----	10-JUN-2013	18-JUN-2013	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	01-JUL-2013	----	05-JUN-2013	01-JUL-2013	✓
<b>ED045G: Chloride Discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	01-JUL-2013	----	05-JUN-2013	01-JUL-2013	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	01-DEC-2013	----	10-JUN-2013	01-DEC-2013	✓
<b>EG020T: Total Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	01-DEC-2013	✓	07-JUN-2013	01-DEC-2013	✓
<b>EG020T: Total Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020B-T)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	01-DEC-2013	✓	07-JUN-2013	01-DEC-2013	✓



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>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	----	----	----	07-JUN-2013	02-JUL-2013	✓
<b>EG050F: Dissolved Hexavalent Chromium</b>								
<b>Clear Plastic Bottle - NaOH (EG050G-F)</b> WRMW1-004, WRMW3-004, WRMW5-004,	WRMW2-004, WRMW4-004, QC4	04-JUN-2013	----	----	----	05-JUN-2013	01-JUL-2013	✓
<b>Clear Plastic Bottle - Natural (EG050G-F)</b> QC6,	QC7	04-JUN-2013	----	----	----	05-JUN-2013	04-JUN-2013	*
<b>EG051G: Ferrous Iron by Discrete Analyser</b>								
<b>Clear Plastic Bottle - HCl - Filtered (EG051G)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	----	----	----	05-JUN-2013	11-JUN-2013	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	02-JUL-2013	----	05-JUN-2013	02-JUL-2013	✓
<b>EK057G: Nitrite as N by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (EK057G)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	05-JUN-2013	----	05-JUN-2013	05-JUN-2013	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	02-JUL-2013	----	05-JUN-2013	02-JUL-2013	✓



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>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	10-JUN-2013	02-JUL-2013	✓	10-JUN-2013	02-JUL-2013	✓
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	10-JUN-2013	02-JUL-2013	✓	10-JUN-2013	02-JUL-2013	✓
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	05-JUN-2013	---	05-JUN-2013	05-JUN-2013	✓
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	---	---	11-JUN-2013	11-JUN-2013	✓
<b>EP026ST: Chemical Oxygen Demand (Sealed Tube)</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EP026ST)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	---	---	11-JUN-2013	02-JUL-2013	✓
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
<b>Clear Plastic Bottle - Natural (EP030)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	---	---	---	05-JUN-2013	06-JUN-2013	✓
<b>EP068A: Organochlorine Pesticides (OC)</b>								
<b>Amber Glass Bottle - Unpreserved (EP068)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	11-JUN-2013	✓	08-JUN-2013	17-JUL-2013	✓



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>EP068B: Organophosphorus Pesticides (OP)</b>								
<b>Amber Glass Bottle - Unpreserved (EP068)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	11-JUN-2013	✓	08-JUN-2013	17-JUL-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	11-JUN-2013	✓	08-JUN-2013	17-JUL-2013	✓
<b>EP074D: Fumigants</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP074)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	18-JUN-2013	✓	10-JUN-2013	18-JUN-2013	✓
<b>EP074E: Halogenated Aliphatic Compounds</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP074)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	18-JUN-2013	✓	10-JUN-2013	18-JUN-2013	✓
<b>EP074F: Halogenated Aromatic Compounds</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP074)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	18-JUN-2013	✓	10-JUN-2013	18-JUN-2013	✓
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP074)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	18-JUN-2013	✓	10-JUN-2013	18-JUN-2013	✓
<b>EP074B: Oxygenated Compounds</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP074)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	18-JUN-2013	✓	10-JUN-2013	18-JUN-2013	✓



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>EP074C: Sulfonated Compounds</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP074)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	18-JUN-2013	✓	10-JUN-2013	18-JUN-2013	✓
<b>EP074G: Trihalomethanes</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP074)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	18-JUN-2013	✓	10-JUN-2013	18-JUN-2013	✓
<b>EP075(SIM)A: Phenolic Compounds</b>								
<b>Amber Glass Bottle - Unpreserved (EP075(SIM))</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	11-JUN-2013	✓	08-JUN-2013	17-JUL-2013	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
<b>Amber Glass Bottle - Unpreserved (EP075(SIM))</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	11-JUN-2013	✓	08-JUN-2013	17-JUL-2013	✓
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	18-JUN-2013	✓	10-JUN-2013	18-JUN-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	04-JUN-2013	07-JUN-2013	18-JUN-2013	✓	10-JUN-2013	18-JUN-2013	✓





## 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>							
Acidity as Calcium Carbonate	ED038	2	20	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Alkalinity by PC Titrator	ED037-P	2	19	10.5	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	EK055G	2	17	11.8	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)	EP030	2	12	16.7	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chemical Oxygen Demand (Sealed Tube)	EP026ST	2	20	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Conductivity by PC Titrator	EA010-P	2	18	11.1	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser	EG051G	2	13	15.4	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	2	15	13.3	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	2	19	10.5	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	11.1	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	8	12.5	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
pH by PC Titrator	EA005-P	2	19	10.5	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	16	12.5	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfide as S2-	EK085	2	20	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (High Level)	EA025H	2	20	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)	EA015H	2	20	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	16	6.3	10.0	✖	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	28	10.7	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	3	27	11.1	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	10	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus as P By Discrete Analyser	EK067G	2	16	12.5	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatle Fraction	EP071	1	10	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	9	11.1	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Turbidity	EA045	2	14	14.3	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	9	11.1	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	1	20	5.0	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Alkalinity by PC Titrator	ED037-P	2	19	10.5	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	EK055G	1	17	5.9	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)	EP030	1	12	8.3	5.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chemical Oxygen Demand (Sealed Tube)	EP026ST	2	20	10.0	10.0	✔	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	✔	NEPM 1999 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>Laboratory Control Samples (LCS) - Continued</b>							
Conductivity by PC Titrator	EA010-P	1	18	5.6	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser	EG051G	1	13	7.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	11.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	8	12.5	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
pH by PC Titrator	EA005-P	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfide as S2-	EK085	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (High Level)	EA025H	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)	EA015H	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	16	12.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	28	7.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	27	7.4	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	10	10.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus as P By Discrete Analyser	EK067G	2	16	12.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatiles Fraction	EP071	1	10	10.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	9	11.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Turbidity	EA045	1	14	7.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	9	11.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	EK055G	1	17	5.9	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)	EP030	1	12	8.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chemical Oxygen Demand (Sealed Tube)	EP026ST	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Conductivity by PC Titrator	EA010-P	1	18	5.6	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser	EG051G	1	13	7.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	11.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	8	12.5	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfide as S2-	EK085	1	20	5.0	5.0	✓	NEPM 1999 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>							
Suspended Solids (High Level)	EA025H	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)	EA015H	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	28	7.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	27	7.4	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	10	10.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus as P By Discrete Analyser	EK067G	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	10.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	9	11.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Turbidity	EA045	1	14	7.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	9	11.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	1	17	5.9	5.0	✓	ALS QCS3 requirement
Chemical Oxygen Demand (Sealed Tube)	EP026ST	1	20	5.0	5.0	✓	ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	1	20	5.0	5.0	✓	ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	ALS QCS3 requirement
Ferrous Iron by Discrete Analyser	EG051G	1	13	7.7	5.0	✓	ALS QCS3 requirement
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	1	15	6.7	5.0	✓	ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.0	5.0	✓	ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	19	5.3	5.0	✓	ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	11.1	5.0	✓	ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	16	6.3	5.0	✓	ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	16	6.3	5.0	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	28	7.1	5.0	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	27	7.4	5.0	✓	ALS QCS3 requirement
Total Phosphorus as P By Discrete Analyser	EK067G	1	16	6.3	5.0	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	9	11.1	5.0	✓	ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	9	11.1	5.0	✓	ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	APHA 21st ed. 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Conductivity by PC Titrator	EA010-P	WATER	APHA 21st ed., 2510 B This procedure determines conductivity by automated ISE. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Dissolved Solids (High Level)	EA015H	WATER	In-House, APHA 21st ed., 2540C A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Suspended Solids (High Level)	EA025H	WATER	In-House, APHA 21st ed., 2540D A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Turbidity	EA045	WATER	APHA 21st ed., 2130 B. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2)
Acidity as Calcium Carbonate	ED038	WATER	APHA 21st ed., 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	APHA 21st ed., 4500-SO4 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 BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (1999) 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
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. 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 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.



Analytical Methods	Method	Matrix	Method Descriptions
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.
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 (1999) Schedule B(3) (Appdx. 2)
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	WATER	APHA 21st ed., 3500 Cr-A & B. Samples are 0.45 um filtered prior to analysis. Hexavalent chromium is determined directly on water sample by Discrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Ferrous Iron by Discrete Analyser	EG051G	WATER	APHA 21st ed., 3500 Fe-B. A colorimetric determination based on the reaction between phenanthroline and ferrous iron at pH 3.2-3.3 to form an orange-red complex that is measured against a five-point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Ammonia as N by Discrete analyser	EK055G	WATER	APHA 21st ed., 4500-NH <sub>3</sub> G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrite as N by Discrete Analyser	EK057G	WATER	APHA 21st ed., 4500-NO <sub>2</sub> - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrate as N by Discrete Analyser	EK058G	WATER	APHA 21st ed., 4500-NO <sub>3</sub> - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrite and Nitrate as N (NO <sub>x</sub> ) by Discrete Analyser	EK059G	WATER	APHA 21st ed., 4500-NO <sub>3</sub> - F. Combined oxidised Nitrogen (NO <sub>2</sub> +NO <sub>3</sub> ) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	APHA 21st ed., 4500-Norg D. 25mL water samples are digested using a traditional Kjeldahl digestion followed by determination by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	APHA 21st ed., 4500-Norg / 4500-NO <sub>3</sub> -. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	APHA 21st ed., 4500-P B&F This procedure involves sulphuric acid digestion of a 100mL sample to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	APHA 21st ed., 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)



Analytical Methods	Method	Matrix	Method Descriptions
Sulfide as S2-	EK085	WATER	APHA 21st ed., 4500-S2- D Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. After the supernatant is discarded, the resultant precipitate is then coloured using methylene blue indicator and measured using UV-VIS detection at 664nm. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Chemical Oxygen Demand (Sealed Tube)	EP026ST	WATER	(APHA 21st ed., 5220C, ALS QWI-EN/EP026) Samples are digested with a known excess of an acidic potassium dichromate solution using silver sulfate as a catalyst. The chromium is reduced from the Cr (VI) oxidation state to the Cr (III) state by the oxygen present in the organic material. The unreacted Cr (VI) can then be titrated with ferrous ammonium sulfate to determine the amount of Cr (VI) consumed. The oxidisable organic matter can be calculated in terms of oxygen equivalents.
Biochemical Oxygen Demand (BOD)	EP030	WATER	APHA 21st ed., 5210 B The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Pesticides by GCMS	EP068	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 (1999) 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 (1999) 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 (1999) 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 (1999) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. 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 (1999) 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 (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



## Summary of Outliers

### Outliers : Quality Control Samples

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

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

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Duplicate (DUP) RPDs</b>							
EK067G: Total Phosphorus as P by Discrete Analyser	EP1304187-004	WRMW4-004	Total Phosphorus as P	----	Not Determined		Analyte not determined in allocated original sample.
<b>Laboratory Control Spike (LCS) Recoveries</b>							
EP074B: Oxygenated Compounds	3455032-002	----	2-Hexanone (MBK)	591-78-6	Not Determined	----	Standard recovery not determined, result less than LOR
<b>Matrix Spike (MS) Recoveries</b>							
EG035T: Total Recoverable Mercury by FIMS	EP1304112-002	Anonymous	Mercury	7439-97-6	21.5 %	70-130%	Recovery less than lower data quality objective

- For all matrices, no Method Blank value 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.

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
WRMW1-004, WRMW3-004, WRMW5-004, QC6,	WRMW2-004, WRMW4-004, QC4, QC7	----	----	----	05-JUN-2013	04-JUN-2013	1
<b>EG050F: Dissolved Hexavalent Chromium</b>							
<b>Clear Plastic Bottle - Natural</b>							
QC6,	QC7	----	----	----	05-JUN-2013	04-JUN-2013	1

### Outliers : Frequency of Quality Control Samples

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

Matrix: **WATER**

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Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Total Kjeldahl Nitrogen as N By Discrete Analyser	1	16	6.3	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement