

Groundwater Monitoring Event

Fishermans Bend Urban Renewal Area



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1.0 Introduction

Environment Protection Authority Victoria (EPA) engaged AECOM Australia Pty Ltd (AECOM) to undertake a Regional Groundwater Monitoring Event (GME) at Fishermans Bend Urban Renewal Area (FBURA) (the site). Refer to **Figure 1** for the site location.

This is the second Regional GME (i.e. GME 2) undertaken at the site. The first Regional GME (GME 1) was conducted by AECOM as part of a Baseline Groundwater Quality Assessment between 16 and 23 November 2015 and reported by AECOM in March 2016. The 2015 Baseline Groundwater Quality Assessment report should be referred to for background information as needed when reading this report.

Both GME 1 and GME 2 focused on the condition of the shallow groundwater aquifer beneath the site, and provide a summary of regional baseline groundwater quality for future reference.

1.1 Objectives

The objectives of GME2 are to:

- Compare GME1 and GME2 field and laboratory data and identify any points of difference.
- Further assess the potential for tides to impact groundwater conditions across a broader area of the site.
- Summarise any additional knowledge in relation to baseline shallow groundwater quality identified in GME1.
- Summarise any additional knowledge in relation to beneficial uses of shallow groundwater identified in GME2.

1.2 Scope of Works

The general scope of works undertaken to achieve the objective was as follows:

- Gauging of standing water levels (SWL) within 38 groundwater monitoring wells across the site.
- Collection of field groundwater quality parameters from 38 groundwater monitoring wells including dissolved oxygen (DO), electrical conductivity (EC), pH, oxygen reduction potential (ORP) and temperature.
- Collection of groundwater samples from 38 groundwater monitoring wells and quality control and quality assurance (QA/QC) samples.
- Assessment of potential tidal influence within 17 groundwater wells.
- Laboratory analysis of groundwater and QA/QC samples.
- Data collation, assessment and reporting.

1.3 Previous Works

The key reports summarising the previous work undertaken at the site are as follows:

- *Desktop Study and Preliminary Regional Conceptual Site Model* for the Fishermans Bend Urban Renewal Area – prepared by AECOM, dated 28 August 2015.
- *Baseline Groundwater Quality Assessment, Fishermans Bend Urban Renewal Area* – prepared by AECOM, dated 16 March 2016.

The pertinent findings obtained during the previous work are as follows:

- Thirty-six (36) groundwater wells were installed across the site in October 2015. The majority of wells encountered groundwater within the Port Melbourne Sands and fill material, whilst one well encountered groundwater within Coode Island Silt (CIS), and two wells encountered groundwater within Older Volcanic clays.

- The final position of groundwater wells resulted in a good distribution and coverage across the site, following adjustments for constraints such as underground services. There is an apparent gap in groundwater wells within the south western section of the Wirraway sub-precinct, however, given the constraints and the intent of the baseline groundwater assessment, it is not considered necessary to install additional wells in this area at this point in time.
- Standing water levels (SWL's) across the site were reported to range between 0.94 and 3.55m below top of casing (mBTOC). The results of the groundwater gauging program indicate that groundwater generally flows in a southerly direction across the site.
- There is considered to be many factors that may influence groundwater flow at the site, including the significant presence of former landfills/quarries, an extensive sewer network, former wetland areas and the Yarra River immediately north of the site. .
- The potential tidal influence was measured in two transects running north to south across the site. Results of this work showed that there was consistency in the way the wells responded to changes in tides, suggesting the tide is an influencing factor. However, the tidal response in relation to groundwater levels was considered to be a very minimal reaction within the well locations along the selected transects.
- Based on the initial 2015 GME undertaken by AECOM, the following groundwater chemicals of potential concern (CoPC) are considered likely to trigger further assessment in relation to assessments and environmental audits associated with future redevelopment of the site:
 - Ammonia as N: Likely to be a diffuse source or co-source that is regionally elevated.
 - Chloride: Considered regionally elevated background conditions.
 - Nitrate (as N): Likely to be a diffuse source that is regionally elevated.
 - Sulfate as SO₄: Considered regionally elevated background conditions.
 - Total dissolved solids: Considered regionally elevated background conditions.
 - Arsenic: Considered regionally elevated background conditions.
 - Iron: Considered regionally elevated background conditions.
 - Manganese: Considered regionally elevated background conditions.
 - Nickel: Considered regionally elevated background conditions.

Refer to the Baseline Groundwater Assessment Report (March 2016) for a detailed description of the environmental setting and regional preliminary conceptual site model.

2.0 Regulatory Setting

The regulatory setting, beneficial uses and applicable environmental criteria are provided in AECOM (March 2016) and reiterated below for ease of reference.

2.1 EPA and the Environment Protection Act

In Victoria, protection of the environment is regulated by the Environment Protection Authority (EPA) which is established via the *Environment Protection Act 1970* (the Act). EPA's role is to be an effective environmental regulator and an influential authority on environmental impacts. EPA is responsible for the regulation of pollution and administration of the Act via its compliance and enforcement actions. EPA recommends and assists in the development of environment policy and prepares guidelines to further guide stakeholders in compliance with the Act.

2.2 State Environmental Policy

State Environment Protection Policy (SEPP) is subordinate legislation and provides further detail on interpretation and expectations for compliance with the Act. A number of policies have been published and include:

- State Environment Protection Policy - *Prevention and Management of Contamination of Land*;
- State Environment Protection Policy - *Groundwaters of Victoria*;
- State Environment Protection Policy - *Waters of Victoria*,
- State Environment Protection Policy – *Ambient Air Quality*;
- State Environment Protection Policy – *Air Quality Management*;
- State Environment Protection Policy - *Control of Noise from Industry, Commerce and Trade*; and
- State Environment Protection Policy - *Control of Music Noise from Public Premises*.

Some of these policies have been amended or varied and there is currently a review being undertaken to contemplate the amalgamation of the Waters of Victoria and Groundwaters of Victoria SEPPs.

For the purpose of this project the SEPPs for Groundwaters of Victoria and Waters of Victoria (as this relates to the point of discharge for groundwater) are most relevant. These are discussed in the following sections.

2.2.1 SEPP Groundwaters of Victoria

The State Environment Protection Policy (Groundwaters of Victoria) 1997 (SEPP GoV) applies to the management of groundwater quality in Victoria. The purpose of the policy is:

“to maintain and where necessary improve groundwater quality sufficient to protect existing and potential beneficial uses of groundwaters throughout Victoria”

Beneficial use means a use of the environment or any element or segment of the environment which is:

- Conducive to public benefit, welfare, safety, health or aesthetic enjoyment and which requires protection from the effects of waste discharges, emissions or deposits or of the emission of noise; or
- Declared to State Environment Protection Policy (SEPP) to be a beneficial use.

The SEPP (GoV) defines beneficial uses of groundwater on the basis of background salinity, measured as total dissolved solids (TDS). Groundwater is considered to be polluted where current and / or future protected beneficial uses for the relevant segment are precluded. Beneficial uses of groundwater are considered precluded when relevant groundwater quality objectives have been exceeded, or where non-aqueous phase liquid is present.

The SEPP GoV allows for the EPA to establish Groundwater Quality Restricted Use Zones (GQRUZ) where one or more beneficial uses are precluded due to contamination. It also indicates that if such a zone is established then the groundwater within the zone must be managed to enable the groundwater to be contained within the restricted use zone. Where pollution of groundwater has been established it must be cleaned up otherwise, in accordance with clause 19(2)(b), groundwater must be cleaned up to the extent practicable (CUTEP).

2.2.2 SEPP Waters of Victoria

The State Environment Protection Policy (Waters of Victoria) (SEPP WoV) was originally Gazetted in 1988. Since then a number of variations have been published. These include:

- Variation to the State Environment Protection Policy (Waters of Victoria) – Insertion of Schedule F6. Waters of Port Phillip Bay [27 August 1997]
- Variation to the State Environment Protection Policy (Waters of Victoria) – Insertion of Schedule F7. Waters of the Yarra Catchment [22 June 1999]
- Variation to the State Environment Protection Policy (Waters of Victoria) [4 June 2003]

The purpose of the SEPP (WoV) [clause 5] *is to help achieve sustainable surface waters by setting out the environmental values and beneficial uses of water that Victorians want, and the environmental quality required to protect them.*

The SEPP (WoV) is an important policy document for this project where the point of discharge for groundwater is the surface waters of the Yarra Port or Hobsons Bay.

2.3 National Environment Protection Measure

The National Environment Protection Council (NEPC) *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM) is the premier guidance document in Australia for the assessment of site contamination. The NEPM is made under the *National Environment Protection Council Act 1994* and is given effect by individual legislation and guidelines in each state and territory. In Victoria, these include the regulatory frameworks established in the relevant State environment protection policies.

The NEPM guidance document was subject to a review process that commenced in 2004 and concluded with the NEPC approving an amending instrument to the 1999 NEPM in April 2013 (NEPC, 2013, *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1)*). The amended 2013 NEPM guidance came into effect on 16 May 2013. The amendment includes repealing all the original schedules to the 1999 NEPM guidance and the substitution of new schedules. Implementation of the amended 2013 NEPM is the responsibility of each state jurisdiction.

It is noted that the SEPP (PMCL) was varied on 24 September 2013 to capture modifications to the schedules within the NEPM.

2.4 EPA Guidelines

As noted above, EPA is responsible for the publication of guidelines to further assist stakeholders to understand their environmental obligations and provide advice relating to compliance.

EPA guidelines which are most relevant to this project and which describe the procedural elements for establishing whether groundwater has been cleaned up to the extent practicable are discussed in the following sections.

2.4.1 EPA Publication 759.3

EPA Publication 759.3 *Environmental auditor (contaminated land): Guidelines for issue of certificates and statements of environmental audit* (21 December 2015) is relevant to this project as it includes guidance to auditors regarding expectations and interpretation of CUTEF process. This project is not subject to a statutory environmental audit, however, certain elements of the project reference the procedural steps in establishing groundwater pollution, the clean up of groundwater pollution and groundwater quality restricted use zones.

2.4.2 EPA Publication 840.2

EPA Publication 840.2 *The Clean Up and Management of Polluted Groundwater* (20 April 2016) provides details on EPA's requirements and expectations for developing and implementing the clean up and management of polluted groundwater to ensure the protection of human health and the environment. Where polluted groundwater has been identified, EPA's role is to require clean up of the pollutants. If it is impracticable to clean up groundwater to the level needed to restore beneficial uses, EPA may accept that clean up to the extent practicable has occurred and that, subject to appropriate ongoing management, further clean up is not required.

When clean up to protect beneficial uses is not practicable (or where clean up has not yet occurred or is currently occurring), polluted groundwater should be managed to ensure the protection of human health and the environment.

2.4.3 EPA Publication 862

As noted above, the SEPP (GoV) allows for the establishment of groundwater quality restricted use zones (GQRUZ) as a tracking and information tool to be applied when the beneficial uses of groundwater are precluded due to pollution. EPA Publication 862 *Groundwater Quality Restricted Use Zone* (July 2002) discusses the various aspects and impacts of GQRUZ for Victorians.

3.0 Beneficial Uses and Environmental Quality Criteria

3.1 Introduction

Beneficial use means a use of the environment or any element or segment of the environment which is:

- Conducive to public benefit, welfare, safety, health or aesthetic enjoyment and which requires protection from the effects of waste discharges, emissions or deposits or of the emission of noise, or:
- Declared in a State Environment Protection Policy (SEPP) to be a beneficial use.

An *element* of the environment is any of the principal constituent parts of the environment including land, water, atmosphere, vegetation, climate, sound, odour, aesthetics, fish and wildlife. The relevant elements for the site are considered to be the following:

- Land at the site.
- Groundwater beneath the surface of the site and down-hydraulic gradient of the site.
- Surface waters hydraulically connected to groundwater and/or receiving runoff from the site.

The selection of environmental quality criteria for this project is based on the consideration of any possible beneficial use that may be feasible, and is particularly focused on the existing and likely future uses of the site.

3.2 Groundwater

In accordance with the SEPP Groundwaters of Victoria (SEPP GoV), groundwater quality objectives for beneficial uses are primarily sourced from the Australian Water Quality Guidelines for Fresh and Marine Waters, published by the Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (ANZECC/ARMCANZ, 2000).

Given the beneficial uses identified in **Section 5.4**, AECOM has referenced the groundwater quality objectives below in order to determine which CoPC are likely to exceed beneficial use criteria on a regional scale.

It is noted that the adopted objectives are preliminary values that were developed using conservative assumptions that may not represent actual site conditions. Exceeding the reference values for a specific chemical does not necessarily indicate that the impact poses significant environmental concerns, only that additional evaluation is warranted. For this project, the additional evaluation is in the form of statistical analysis to determine possible regional background ranges of relevant CoPC.

Table 1 Adopted Guidelines for Groundwater Beneficial Uses

Receptor Type	Beneficial Use	Adopted Guideline Source
Discharge to surface water	Maintenance of Ecosystems	<p>For maintenance of ecosystems, the SEPP Waters of Victoria (SEPP (WoV) and its schedules apply. The SEPP (WoV) adopts surface water objectives from Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000).</p> <p>The Yarra River in the vicinity of the Site falls within the 'Yarra Port Segment' and 'Highly Modified ecosystem' in the SEPP (WoV) – Schedule F7 – Waters of the Yarra Catchment and therefore a 90% level of ecosystem protection will be adopted.</p> <p>Where no high reliability guideline values are available in ANZECC/ARMCANZ (2000) for potential contaminants of concern (e.g. metals, PAHs and TPH) the following guidelines will be adopted:</p> <ul style="list-style-type: none"> - ANZECC/ARMCANZ (2000) moderate and low reliability trigger values. Where exceedences of these low reliability screening values are reported, the magnitude of exceedence should be considered in light of the reliability of these values. - The errata to ANZECC/ARMCANZ (2000) replaced the trigger values for nitrate with "under review". The 90% grading value for nitrate from Hickey (2013). Updating nitrate toxicity effects on freshwater aquatic species will be adopted. - In the absence of receptor-specific screening values established in Australia, publications from other international jurisdictions (e.g. Canada, USA, UK, Netherlands) will be reviewed to identify an indicative screening value for comparative purposes.
Discharge to surface water	Primary Contact Recreation	<p>AECOM has considered National Health and Medical Research Council (NHMRC) <i>Guidelines for Managing Risks in Recreational Water</i> (2008). This document references the NHMRC <i>Australian Drinking Water Guidelines</i> (2004) (the drinking water guidelines that were current at the time) as a guide. <i>Australian Drinking Water Guidelines 6</i> was published in 2011 (NHMRC 2011). Subsequent revisions to the guidelines were made in 2013, 2014, 2015 and 2016. NHMRC 2011 will be referred to for updated drinking water guideline values.</p> <p>NHMRC (2013) states that to account for percentage of daily intake from recreational waters, the drinking water guidelines provided can be modified by a factor of 10 to provide screening levels for chemicals. Hence, the objectives and approach presented in NHMRC (2011) have been adopted. Where no guidelines are listed for particular contaminants in NHMRC (2011), the following will be adopted (in order of preference) and multiplied by a factor of 10 for chemicals that are based on an ingestion scenario:</p> <ul style="list-style-type: none"> - WHO (2011) Guidelines for Drinking Water Quality – Health - USEPA (November 2015) Regional Screening Levels for Residential Tap Water

Receptor Type	Beneficial Use	Adopted Guideline Source
Extractive Use	Potable water supply	<p>The SEPP (GoV) specifies water quality indicator levels in groundwater should be less than the levels specified in the Australian Water Quality Guidelines for Fresh and Marine Waters. For drinking water, ANZECC/ARMCANZ (2000) refers to the Australian Drinking Water Guidelines.</p> <p>The following hierarchy for drinking water guidelines will therefore be adopted:</p> <ul style="list-style-type: none"> - NHMRC (2011) Australian Drinking Water Guidelines - World Health Organization (WHO) (2011) Guidelines for Drinking Water - USEPA (November 2015) Regional Screening Levels for Residential Tap Water
Extractive Use	Agriculture, Parks and Gardens	<p>The SEPP (GoV) specifies water quality indicator levels in groundwater should be less than the levels specified in the Australian Water Quality Guidelines for Fresh and Marine Waters. Section 4.2 of ANZECC/ARMCANZ (2000) contains trigger values for irrigation water use. Where both long-term and short-term trigger values are provided for specific chemicals (e.g. heavy metals) the long-term trigger values (LTV) have been conservatively adopted.</p>
Extractive Use	Stock watering	<p>The SEPP (GoV) specifies water quality indicator levels in groundwater should be less than the levels specified in the Australian Water Quality Guidelines for Fresh and Marine Waters. Where Section 4.3 of ANZECC 2000 does not specify IL for this beneficial use - Table 5.10 in ANZECC 1992 can be used.</p> <p>Where neither ANZECC 1992 nor ANZECC 2000 specify IL, the <i>Australian Drinking Water Guidelines 2011</i> can be referred to in the first instance. WHO (2011) may be referred to where no ILs are specified in the Australian Drinking Water Guidelines (ADWG). For organic chemicals, the USEPA Regional Screening Levels for tap water may also be considered.</p>
Extractive Use	Industrial Use	<p>No adopted guidelines due to the wide range of possible industrial uses of water, and the application of other guidelines herein are considered sufficient to indicate protection of this beneficial use.</p>
Direct contact	Buildings and Structures	<p>The SEPP (GoV) specifies that introduced contaminants shall not cause groundwater to become corrosive to structures or building materials. Australian Standard AS2159 (2009) – Piling, Design and Installation includes exposure condition classifications for sulfate, pH and chloride. Table 6.4.2(C) of AS2159 will be referred to assess the severity of sulfate, pH and chloride on concrete structures.</p>
Vapour Intrusion	Buildings and Structures	<p>NEPM 1999 (as amended 2013) Groundwater Health Screening Levels (HSLs).</p>

4.0 Field Investigation

GME2 was conducted between 16 and 19 May 2016 as follows:

- Groundwater gauging:
 - 16 May 2016 (within an approximate 4 hour period to minimise the potential for tidal influence during gauging).
- Groundwater sampling and deployment of level loggers for assessment of tidal influence:
 - 16 and 19 May 2016.

The above tasks are described in detail in the following sections.

4.1 Field Methodology

The groundwater sampling and gauging program included the following activities:

- Equipment calibration.
- Groundwater gauging.
- Groundwater sampling.
- Decontamination of groundwater sampling equipment.
- Sample transport and laboratory analysis.

The above activities are discussed in detail in the following sub-sections.

4.1.1 Groundwater Gauging Program

Table 2 provides a summary of the results of the GME2 gauging event. Refer to the Baseline Groundwater Assessment Report (March 2016) for installation details of each groundwater well.

With the exception of groundwater wells GW02, GW04, GW07, GW09 – GW12 and GW21 that could not be gauged due to access constraints during GME2, all remaining 27 groundwater wells were gauged within a 3 hour period on 16 May 2016 to minimise tidal influence on the results. Gauging of all wells was completed within 4 hours and 22 minutes which is considered satisfactory, and the potential for tidal influence during this time is likely to be minimal. Refer to **Figure 2** for the groundwater well locations.

Groundwater monitoring wells were gauged using an electronic oil/water interface probe, for depth to groundwater, potential light non aqueous phase liquid (LNAPL) presence, and total depth of each well. Gauging records are provided in **Appendix A**.

The groundwater levels recorded during the GME2 gauging program were found to range between 0.82 (GW15) and 3.37 (GW02) mBTOC. The groundwater levels recorded in GME1 ranged between 0.94 (GW15) and 3.55 (GW04) mBTOC, with the exception of GW35 where the water level dropped by 0.46m from 2.14 to 2.60 mBTOC.

In general, the water levels reported during GME2 aligned well with the GME1 water levels, and there are no significant fluctuations.

Total well depths were also recorded during the GME2 gauging event as seen in **Table 2**. It is noted that a number of the total well depths appear to have decreased (considerably in some instances) since GME1. It is likely that this variation is due to some of the groundwater wells silting up post groundwater well installation. Based on the comparison of the 2015 GME1 laboratory data to the 2016 GME2 laboratory data, it is unlikely that the possible silt increase has affected the results of GME1 significantly. However, further consideration may need to be given to the redevelopment of these wells in advance of any future monitoring events.

Note that the shaded cells in **Table 2** are groundwater wells that have undergone tidal assessment.

Table 2 Summary of Groundwater Gauging Results (2015 GME1 and 2016 GME2)

Well ID	Screen (m)	Elevation TOC (mAHD)	2015 Total Well Depth (mBTOC)	2016 Total Well Depth (mBTOC)	2015 Total Well Depth (mAHD)	2016 Total Well Depth (mAHD)	2015 Water Level (mBTOC)	2016 Water Level (mBTOC)	2015 Water Level (mAHD)	2016 Water Level (mAHD)
GW1	2.5-4.5	2.50	4.50	4.39	-2.01	-1.89	2.91	2.43	-0.42	0.07
GW2	2.9-4.0	3.97	4.00	3.92	-0.03	0.05	3.24	3.37	0.73	0.60
GW3	3.0-4.9	3.85	4.90	4.54	-1.05	-0.70	3.04	3.18	0.81	0.67
GW4	2.6-5.1	3.82	5.10	4.72	-1.28	-0.90	3.55	3.19	0.27	0.64
GW5	2.5-4.5	3.05	4.50	3.13	-1.45	-0.08	2.33	2.44	0.72	0.61
GW6	2.0-4.0	2.25	4.00	3.68	-1.76	-1.43	1.90	2.01	0.34	0.23
GW7	3.0-5.5	3.09	5.50	5.34	-2.41	-2.25	2.64	2.74	0.45	0.35
GW8	2.2-4.2	3.13	4.20	3.20	-1.07	-0.07	2.63	2.72	0.50	0.41
GW9	3.5-5.5	3.28	5.50	5.51	-2.22	-2.23	2.76	2.87	0.52	0.41
GW11	3.0-5.1	2.58	5.10	4.38	-2.52	-1.80	2.12	2.26	0.46	0.32
GW12	2.2-4.2	2.85	4.20	4.10	-1.35	-1.25	2.64	2.77	0.22	0.08
GW13	2.2-4.2	2.40	4.20	3.57	-1.80	-1.17	2.28	2.35	0.12	0.05
GW14	2.0-4.0	2.36	4.00	3.20	-1.64	-0.84	1.94	2.04	0.42	0.31
GW15	2.5-4.5	1.22	4.50	4.46	-3.28	-3.24	0.94	0.82	0.28	0.40
GW16	2.0-4.0	2.48	4.00	3.09	-1.52	-0.61	2.19	2.22	0.28	0.26
GW17	1.5-3.0	2.04	3.00	2.88	-0.96	-0.84	2.36	2.27	-0.33	-0.23
GW18	2.0-4.5	0.78	4.50	4.45	-3.72	-3.67	1.51	1.35	-0.73	-0.57
GW19	2.5-5.5	1.56	5.50	5.14	-3.94	-3.58	1.02	1.05	0.54	0.51
GW10	3.0-5.5	3.10	5.50	4.45	-2.40	-1.35	2.70	2.89	0.40	0.21

Well ID	Screen (m)	Elevation TOC (mAHD)	2015 Total Well Depth (mBTOC)	2016 Total Well Depth (mBTOC)	2015 Total Well Depth (mAHD)	2016 Total Well Depth (mAHD)	2015 Water Level (mBTOC)	2016 Water Level (mBTOC)	2015 Water Level (mAHD)	2016 Water Level (mAHD)
GW20	2.0-5.0	3.17	5.00	4.91	-1.84	-1.75	2.87	3.02	0.30	0.15
GW21	2.5-4.0	2.61	4.00	3.92	-1.40	-1.32	2.45	2.53	0.16	0.08
GW22	2.5-4.0	2.02	4.00	2.75	-1.98	-0.73	2.37	2.25	-0.35	-0.23
GW23	2.5-4.0	1.90	4.00	4.16	-2.10	-2.26	2.30	2.22	-0.40	-0.32
GW24	1.2-3.0	1.67	3.00	3.41	-1.33	-1.74	1.38	1.35	0.30	0.32
GW25	2.0-4.45	3.42	4.45	4.23	-1.04	-0.82	2.85	2.98	0.57	0.43
GW26	2.0-4.0	2.45	4.00	3.61	-1.55	-1.16	2.48	2.58	-0.03	-0.13
GW27	2.4-5.0	2.30	5.00	4.92	-2.70	-2.62	3.19	2.95	-0.89	-0.64
GW28	1.7-2.5	1.62	2.50	2.30	-0.88	-0.68	1.43	1.31	0.19	0.31
GW30	2.1-4.5	2.16	4.50	4.02	-2.34	-1.86	2.70	2.81	-0.54	-0.65
GW29	2.0-4.0	2.58	4.00	3.81	-1.42	-1.23	2.85	3.03	-0.26	-0.44
GW31	2.5-4.5	1.49	4.50	4.03	-3.01	-2.54	1.66	1.37	-0.18	0.12
GW32	-	1.88	-	7.85	-	-5.98	2.28	2.21	-0.41	-0.33
GW33	2.0-4.0	2.51	4.00	4.12	-1.49	-1.61	2.35	2.30	0.16	0.22
GW34	1.7-4.0	1.10	4.00	3.99	-2.90	-2.89	1.59	1.44	-0.50	-0.35
GW35	-	2.00	4.0	4.00	-2.0	-2.00	2.14	2.60	-0.14	-0.60
GW36	1.3-3.5	1.67	3.50	3.51	-1.83	-1.84	2.65	2.67	-0.98	-1.00
GW37	4.0-7.0	2.24	7.00	6.99	-4.77	-4.76	2.86	2.87	-0.63	-0.64
GW38	4.0-7.0	2.36	7.00	6.64	-4.64	-4.28	3.54	3.61	-1.18	-1.24

4.1.2 Groundwater Purging and Sampling

Groundwater purging and sampling for GME2 was undertaken between 16 and 18 May 2016 in general accordance with the following:

- EPA Publication 669 (Groundwater Sampling Guidelines) (EPA, 2000)
- EPA Publication 668 (Hydrogeological Assessment (Groundwater Quality) Guidelines) (EPA, 2006)
- Industrial Waste Guidelines, Publication IWRG701 (Sampling and Analysis of Waters, Wastewaters, Soil and Wastes) (EPA, 2009)

All groundwater samples were collected using low-flow, micropurge techniques.

During low-flow purging, groundwater was regularly tested with a small volume covered flow cell for water quality parameters including dissolved oxygen (DO), electrical conductivity (EC), pH, redox potential (Eh) and temperature (T). Water levels were also monitored throughout the purging process to ensure that drawdown was not greater than 10%. Refer to **Appendix B** for a copy of the groundwater sampling forms.

To ensure that samples were as representative as possible of groundwater conditions within the aquifer, groundwater samples were collected when the above parameters had stabilised. Groundwater parameters were considered to have stabilised when at least 3 consecutive readings were taken at least 3 minutes apart within +/- 3% for EC, +/- 10% for DO and temperature, +/- 10 mV for Eh and +/- 0.05 for pH. It is noted that DO was the most challenging parameter to stabilise in one of the two multimeters used, possibly due to the sensitivity of the probes and/or the presence of sediment in the groundwater.

All groundwater samples were placed into appropriate laboratory supplied bottles with the appropriate preservative pre-dosed by the laboratory (as necessary). Groundwater samples that were to be analysed for dissolved metals and ferrous iron were filtered using 0.45 µm disposable Stericup filters and placed in sample containers containing appropriate preservatives. Groundwater samples were immediately chilled and stored at a temperature of approximately 4C or less prior to transit to the laboratory.

4.1.3 Decontamination Procedure

Monitoring and sampling equipment (such as the interface probe and low flow sampling equipment) were decontaminated during the groundwater sampling process. In summary, sampling equipment was washed with Decon 90 solution, prior to being double rinsed (first with potable water and then with clean deionised water).

4.1.4 Sample Tracking and Chain of Custody Procedures

Once samples were collected, the primary and quality control sample numbers were transcribed onto a chain of custody form (COC). The COC analytical schedule was filled out by the field supervisor and then checked by the Project Manager before analysis.

All groundwater samples were transported cold (with ice) and couriered either overnight or via a same day courier to ensure holding times were not compromised. COC forms and sample receipt notifications (SRN) are provided in **Appendix C**.

Despite providing the samples to the laboratory in a timely manner, ALS Environmental (ALS) advised AECOM that a number of samples were not immediately logged in their system. This has resulted in a minor breach of holding times as follows:

- Nitrite as N and Reactive Phosphorous as P: GW06, GW11, GW12, GW25, GW26, GW01, GW03 – GW05, GW07 – GW09, GW14, GW16, GW17, GW20, GW21, GW33 – GW38

This is not considered to affect the outcome of this report as the holding times were breached by between 1 – 2 days and the 2016 GME2 data appears to be consistent with the 2015 GME1 data.

4.1.5 Measuring Potential Tidal Influence

Following the 2015 GME1 sampling event, level loggers were deployed in 11 wells across to transects to monitor tidal influence and variations in EC, DO, ORP, pH, temperature and barometric pressure.

During the 2015 GME1 investigation, there was minimal fluctuation in groundwater depth within groundwater wells aligned in a north to south direction on specific transects over the course of approximately 1 week, with very little response shown in wells in the southern section of the site in particular. It was therefore recommended that

further monitoring be conducted in a minimum of 17 groundwater wells across a broader area in the northern portion of the site (i.e. no transects)

As per the recommendation, AECOM conducted further assessment of potential tidal influence during GME2. The majority of wells that underwent assessment in GME2 are located in the Lorimer, Sandridge and Montague precincts due to their proximity to the Yarra River (i.e. GW13 to GW19, GW03, GW05, GW20 to GW24 and GW31 to GW33). Refer to **Figure 2** for the location of groundwater wells.

TROLL 9500s units (i.e. level loggers) were deployed using suspension cables attached to the gatic lids at a depth of approximately 1.0 m below SWL. Data logging was initiated using a direct connection to a laptop and the TROLL 9500 software program within 5 minutes after submersion in the groundwater well. Units were left in place between 19 and 27 May 2016 and logging was ceased using the multimeter software program when the units were removed from the study wells. The data stored on the units was compiled and sent to AECOM for assessment. The above methodology is consistent with the methodology adopted during the 2015 GME1.

4.1.6 Laboratory Analysis

All primary groundwater and soil samples were sent to chemical analytical laboratory ALS while secondary groundwater samples were sent to Envirolab Services (Envirolab). Each laboratory is NATA accredited for the analytical methodologies used. Refer to **Appendix D** for a summary of the results and **Appendix C** for a copy of the laboratory transcripts.

Groundwater samples underwent the laboratory analysis described in **Table 3**. All analyses and sampling was undertaken in accordance with Victorian EPA (2000b) *Publication 669 – Groundwater Sampling Guidelines*, and Victorian EPA (2009) *Industrial Waste Resource Guidelines (IWRG701) – Sampling and Analysis of Waters, Wastewaters, Soils, and Wastes*.

Table 3 Groundwater Laboratory Analysis

Analyte	No. of Primary Samples	Groundwater Wells Sampled
pH, TDS, Metals (Arsenic [As], Cadmium [Cd], Total Chromium [Cr], Copper [Cu], Lead [Pb], Nickel [Ni], Zinc [Zn], Aluminium [Al], Iron [Fe], Selenium [Se] and Mercury [Hg])	40	GW01 – GW38
Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene (BTEXN)	16	GW01, GW02, GW04, GW10, GW12, GW14, GW16, GW18, GW21, GW24, GW27, GW28, GW36 and GW38
Total Recoverable Hydrocarbon (TRH(C ₆ – C ₄₀)), Polycyclic aromatic hydrocarbons (PAH)	40	GW01 – GW38
Volatile Organic Compounds (VOC) Trace Suite (71 analytes) ALS Method Code: EP074-WF – Includes BTEXN	24	GW03, GW05-GW09, GW11, GW13, GW15, GW017, GW19, GW20, GW22, GW23, GW25, GW26, GW29-GW35 and GW37
Nitrogen Oxides (NO _x)/ Sulfur Oxides (SO _x)	40	GW01 – GW38
Ionic Chemistry Suite: Sodium (Na), calcium (Ca), magnesium (Mg), potassium (K), chloride (Cl), bicarbonate (HCO ₃), nitrate (NO ₃), nitrite (NO ₂), ammonia (NH ₃) phosphate (PO ₄), sulphate (SO ₄), fluoride (F), and manganese (Mn)	40	GW01 – GW38
BTEXN/TRH(C ₆ -C ₉)	4	Trip Blank Samples
BTEXN/TRH(C ₆ -C ₄₀)/Metals	4	Rinsate Samples

4.1.7 Quality Assurance / Quality Control Procedures

Quality assurance/quality control (QA/QC) procedures were conducted in general accordance with EPA Publication 669 (Groundwater Sampling Guidelines) (EPA, 2000), Industrial Waste Guidelines, Publication IWRG701 (Sampling and Analysis of Waters, Wastewaters, Soils and Wastes) (EPA, 2009), NEPM 1999 (as amended 2013) and Australian Standards (AS4482.1). Refer to **Appendix E** for a register of the QA/QC samples.

5.0 2016 GME Data Assessment

The Baseline Groundwater Assessment Report (March 2016) containing GME1 data describes an assessment framework which aims to:

- Describe the physical-chemical condition of the shallow aquifer encountered across the site.
- Evaluate whether the data collected are representative of a single or multiple elements of the groundwater flow system.
- Identify potential anomalies and/or outliers (including potential localised contaminant sources/ impacts for separate consideration to the main data set.
- Identify chemicals that are detectable in groundwater and whether they may be associated with natural and/or anthropogenic sources.
- Describe the concentration ranges of these chemicals that may be encountered in groundwater in association with anthropogenic ambient conditions (non-point source) and/or natural background conditions.
- Identify whether the detected concentrations of these chemicals have the potential to preclude beneficial uses of the aquifer.

The assessment framework was worked through in a step-wise manner within the Baseline Groundwater Assessment Report (March 2016) to identify a representative data set that could be utilised as a point of reference for future environmental assessments at the site.

The following sections provide an assessment of the 2016 GME2 data and should be read in conjunction with the findings of the Baseline Groundwater Assessment Report (March 2016). These sections aim to:

- Compare GME1 and GME2 field and laboratory data.
- Summarise any additional knowledge in relation to baseline shallow groundwater quality identified in GME1.
- Summarise any additional knowledge in relation to beneficial uses of shallow groundwater identified in GME1.

5.1 Lithology

Based on the field observations (only) during GME1, all groundwater locations (except GW19 [Coode Island Silt - CIS], GW37 and GW38 [Older Volcanics]) were considered as one data set as these locations showed evidence of hydraulic continuity. As such, and in terms of further 'regional' data interrogation, locations GW19, GW37 and GW38 were removed from the overall regional groundwater data set in the Baseline Groundwater Assessment Report.

As no further stratigraphic information has been obtained since the 2015 GME1. The data from wells GW19, GW37 and GW38 will continue to be considered separately for the purposes of assessing regional shallow groundwater conditions across the site. The data from these wells is considered a useful reference point for assessment of groundwater within different lithologies.

5.2 Groundwater Flow Paths

5.2.1 Flow Direction

Based on our review of the GME1 preliminary gauging and tidal data with respect to groundwater flow paths, there was insufficient evidence to identify a recharge or discharge mixing zone based on tidal influence. As such, the data set (with the exception of GW19, GW37 and GW38 – as indicated above) was considered most likely to represent a single flow-through groundwater zone. The data set was not further separated when assessing possible regional background conditions.

The 2016 GME2 gauging data for shallow groundwater across the site is generally consistent with the gauging data obtained in the 2015 GME1. Hence, the regional shallow groundwater flow paths in fill and the Port Melbourne Sands across the site again appears to be southerly based on the results of the gauging program conducted on 16 May 2016 (**Figures 4A to 4C**). Possible anomalies are discussed in **Section 5.3**.

As discussed in the Baseline Groundwater Assessment Report (March 2016), the shallow groundwater flowing in the fill material and Port Melbourne Sands is considered an unconfined aquifer and it is likely to be recharged by

direct infiltration of rainfall, leaking services, or flows from the Yarra River under high tide conditions. Historical Yarra River elevation data reported by Melbourne Water indicates that the Yarra River is generally tidal near the site, and the rising and falling of the river will likely result in some mixing of the groundwater. It is also expected that more dense (i.e. saline) water would exist at the base of the river.

Based on the results of both gauging rounds, various site activities and surface coverage of land are considered to be affecting the extent of recharge of the shallow aquifer. In addition, shallow underground infrastructure is expected to create artificial recharge (via leakage at points that are shallower than groundwater) and preferential flow paths (via groundwater draining at points that are deeper than groundwater). Given the shallow depth of the upper unconfined aquifer being assessed at the site, it is unlikely that deep underground infrastructure has a significant impact on flow direction.

In summary, the description of flow paths across the site during GME1 remains unchanged, as the GME2 gauging data provides a greater degree of certainty with respect to the GME1 findings.

5.2.2 Tidal Influence

During the 2015 GME1, the potential tidal influence was measured in two transects running north to south across the site. Results of this work showed that there was consistency in the way the wells responded to changes in tides, indicating the tide was an influencing factor. However, the tidal response in relation to groundwater levels was considered a very minimal reaction within the well locations along the selected transects. Further assessment of potential tidal influence across a broader area of the site was undertaken during the 2016 GME2 to assist in developing a greater understanding of groundwater flow.

The raw data obtained during this 2016 GME2 was graphed against the predicted tidal elevations provided on the Bureau of Meteorology (BoM) website, EC readings and barometric pressure readings. Groundwater elevations calculated from the TROLL 500 unit measurements for the following wells are plotted below against the predicted Williamstown tides published by BoM:

- Lorimer: GW13, GW14, GW16, GW17, GW18
- Sandridge: GW22, GW23, GW24
- Wirraway: GW03, GW05
- Montague: GW31, GW33, GW35

TROLL 500 Units were also placed in GW15, GW19, GW20 and GW21, however, the graphs suggest that the transducers within GW15 and GW19 potentially dislodged (i.e. dropped) and the TROLL 500 units in GW20 and GW21 possibly malfunctioned.

Groundwater wells GW15 and GW19 exhibited the highest TDS concentrations (>20,000 mg/L) in 2015 and 2016 suggesting there is a strong connection with the Yarra River. If the TROLL 500 units were not dislodged then groundwater may be undergoing extraction or discharging to nearby services. It is worth noting that a similar observation was made during the 2015 GME1 with respect to groundwater well GW15. It would be valuable to manually gauge the groundwater at this location during any future tidal assessment work (should it be undertaken).

The supplier of the TROLL 500 Units was contacted regarding the results at GW20 and GW21, and upon reviewing the data, the supplier agreed that these two units malfunctioned and the data is not reliable. This is not considered to affect the outcome of this report, as the remaining 15 units provide an adequate spread of data across the site.

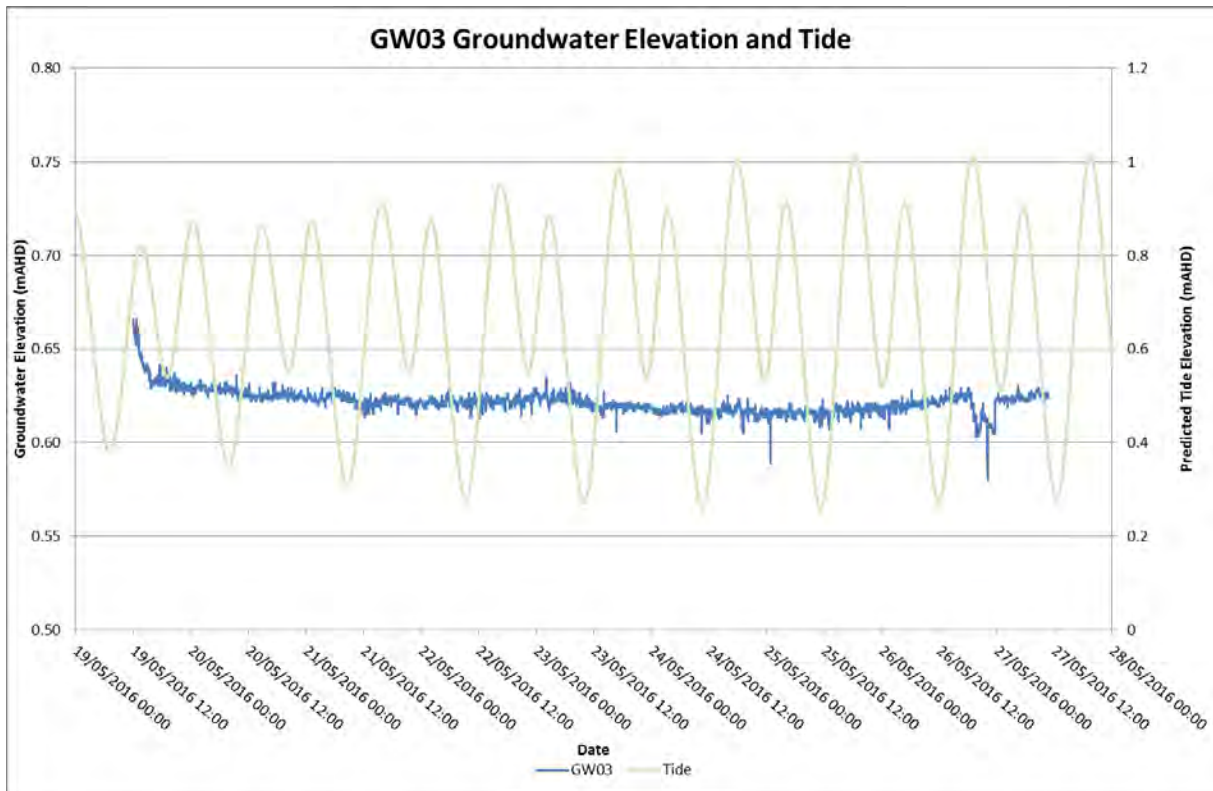
Overall, the influence of ocean tides on groundwater elevation appeared to be minimal over the monitoring period (similar to the observations made in 2015). The greatest variations (~0.01 m) were observed in wells GW17 – GW18 (southern boundary of the Lorimer sub-precinct), GW24 and GW31 (north eastern portion of the Sandridge sub-precinct). As such, it does not appear that proximity to surface water bodies is a strong influencing factor.

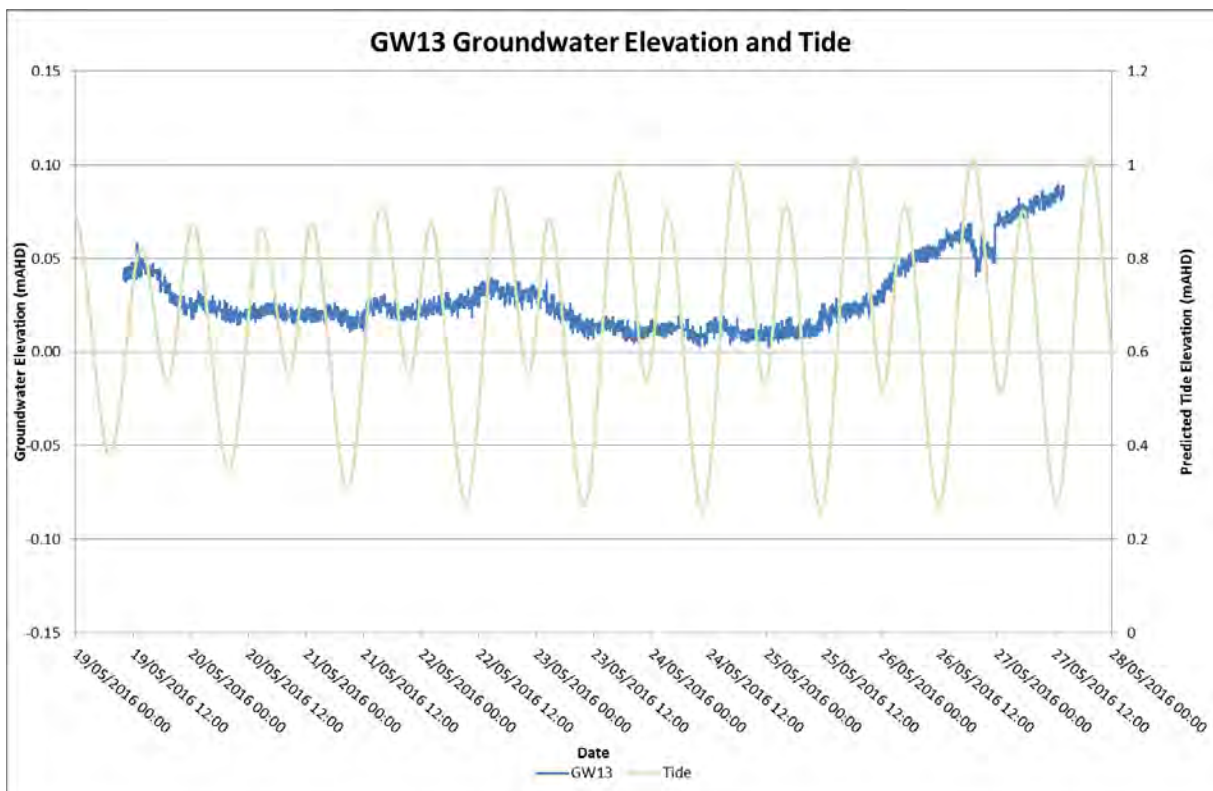
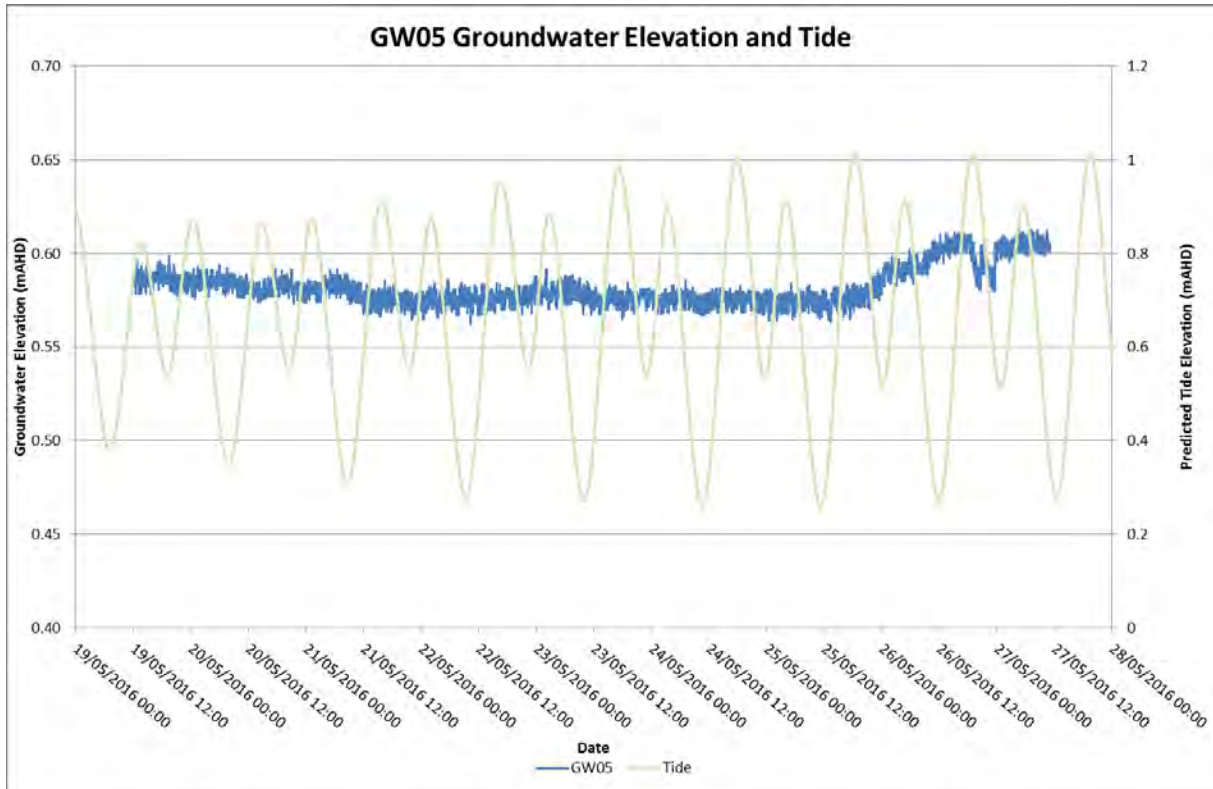
The additional influence of a diurnal atmospheric tide is apparent in several of the wells where the groundwater elevation at the predicted high ocean tide in the afternoon is greater than the groundwater elevation during the predicted high ocean tide at night.

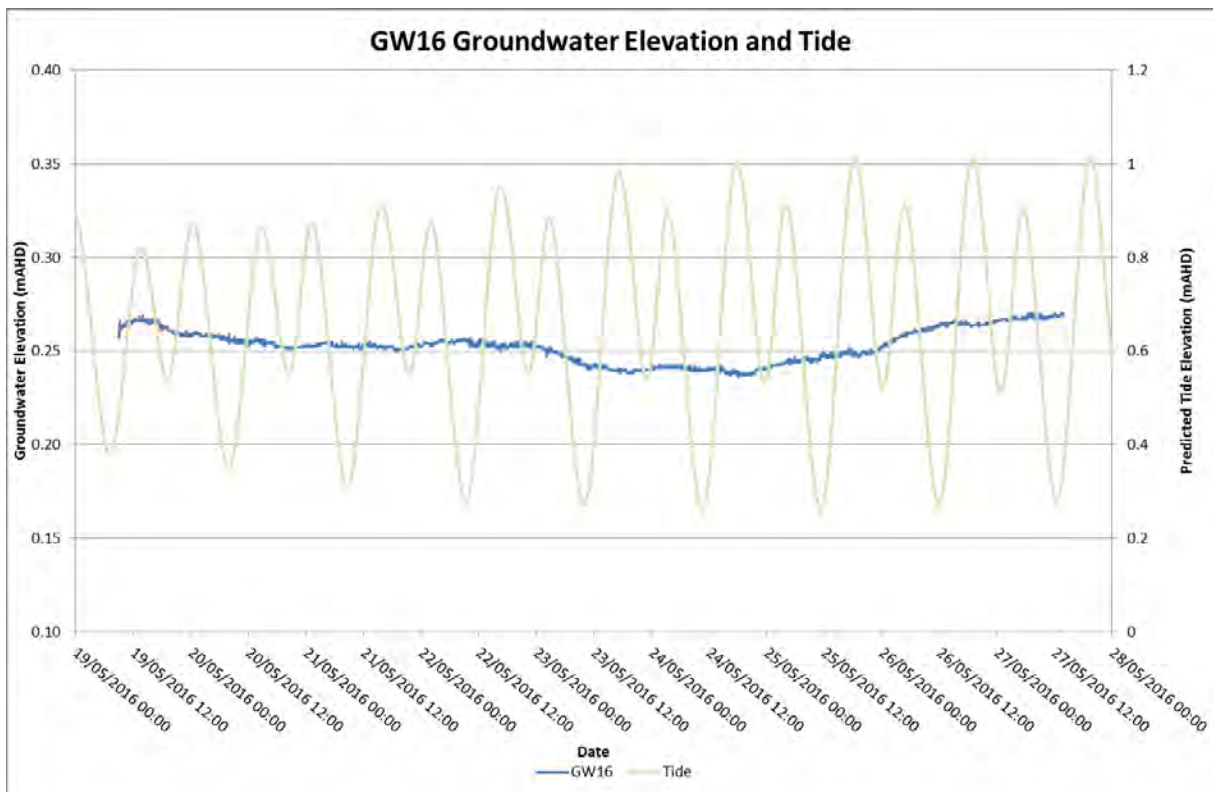
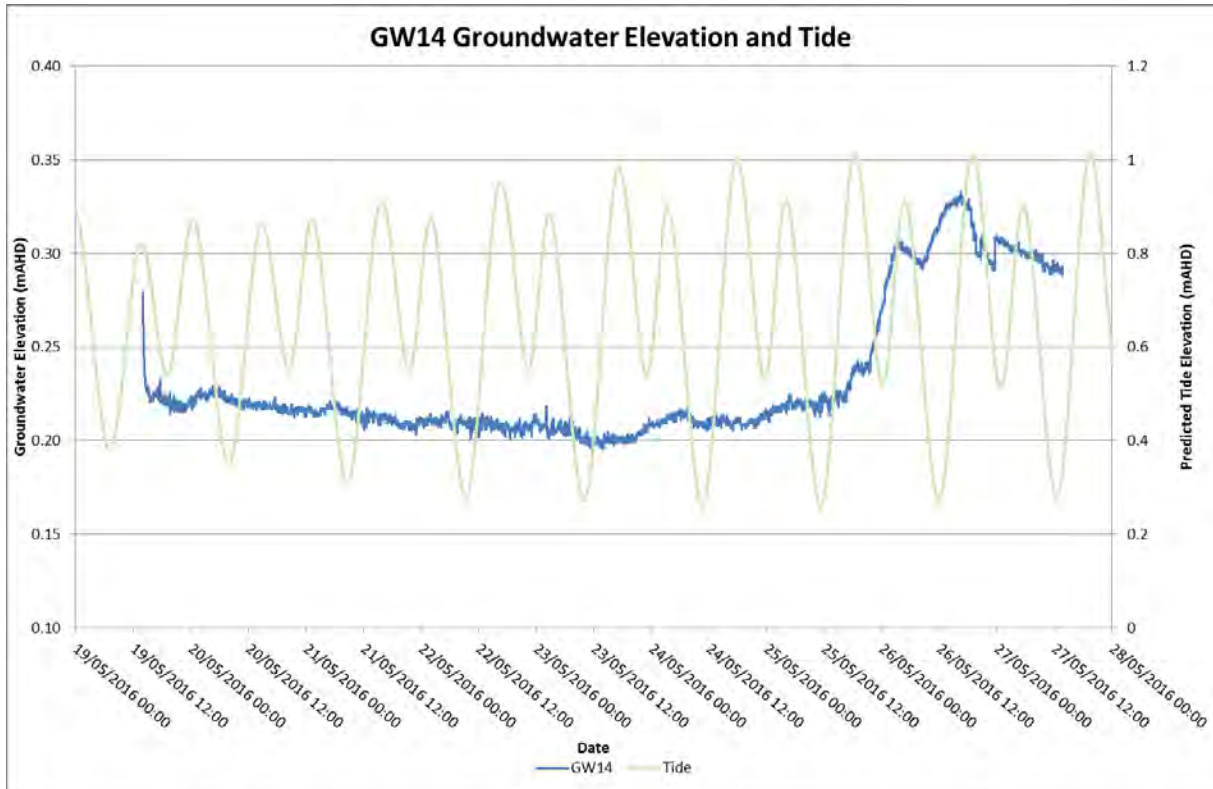
Groundwater elevations in GW03 and GW05 in the Wirraway Precinct, GW14 and GW16 in the Lorimer Precinct and GW33 and GW35 in the Montague Precinct showed negligible influence from ocean tides.

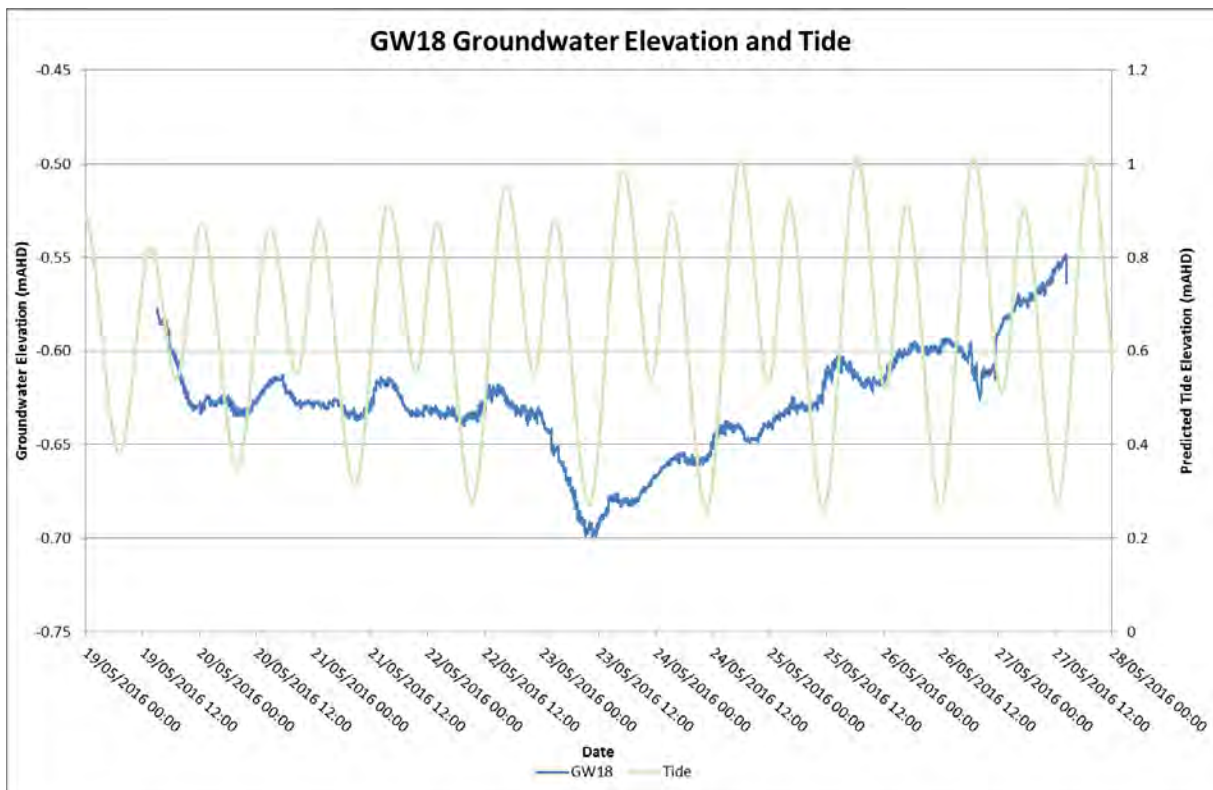
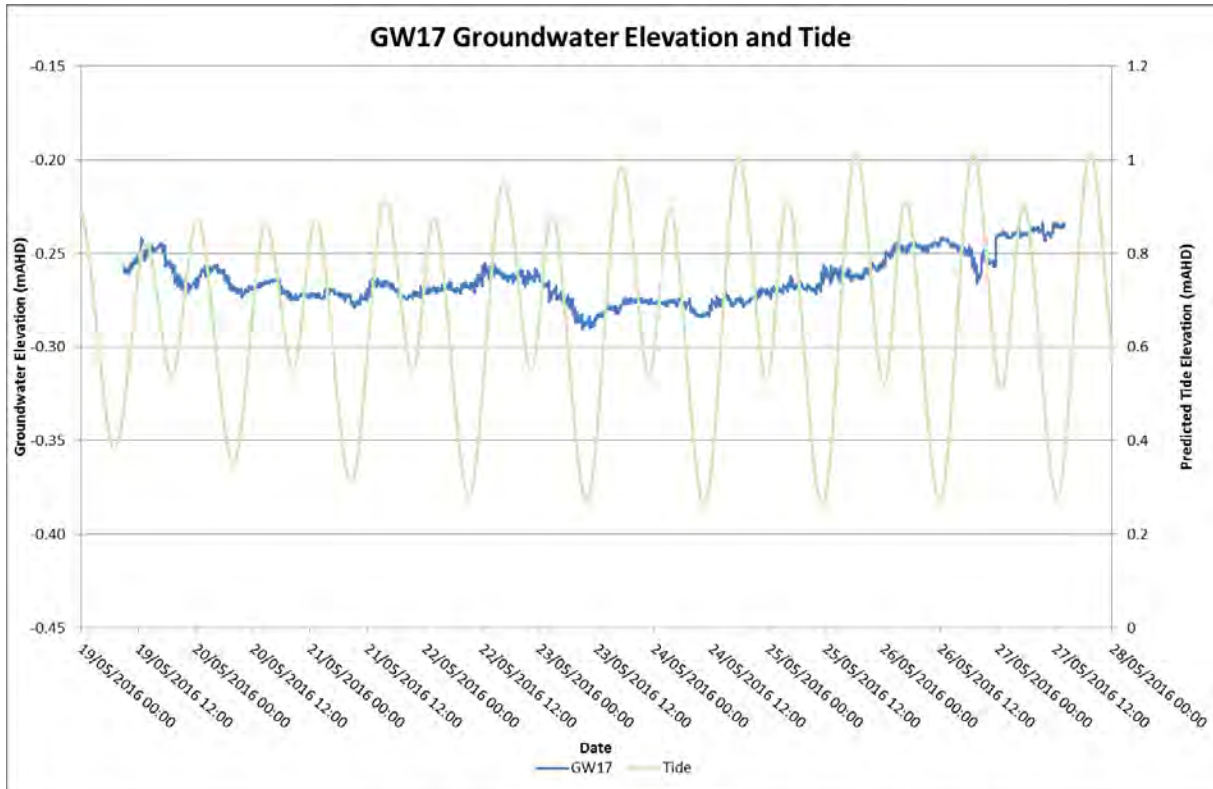
In terms of geology, there are no obvious differences between these 6 wells and the other graphed below, as they all encountered groundwater within fill and Port Melbourne Sands material.

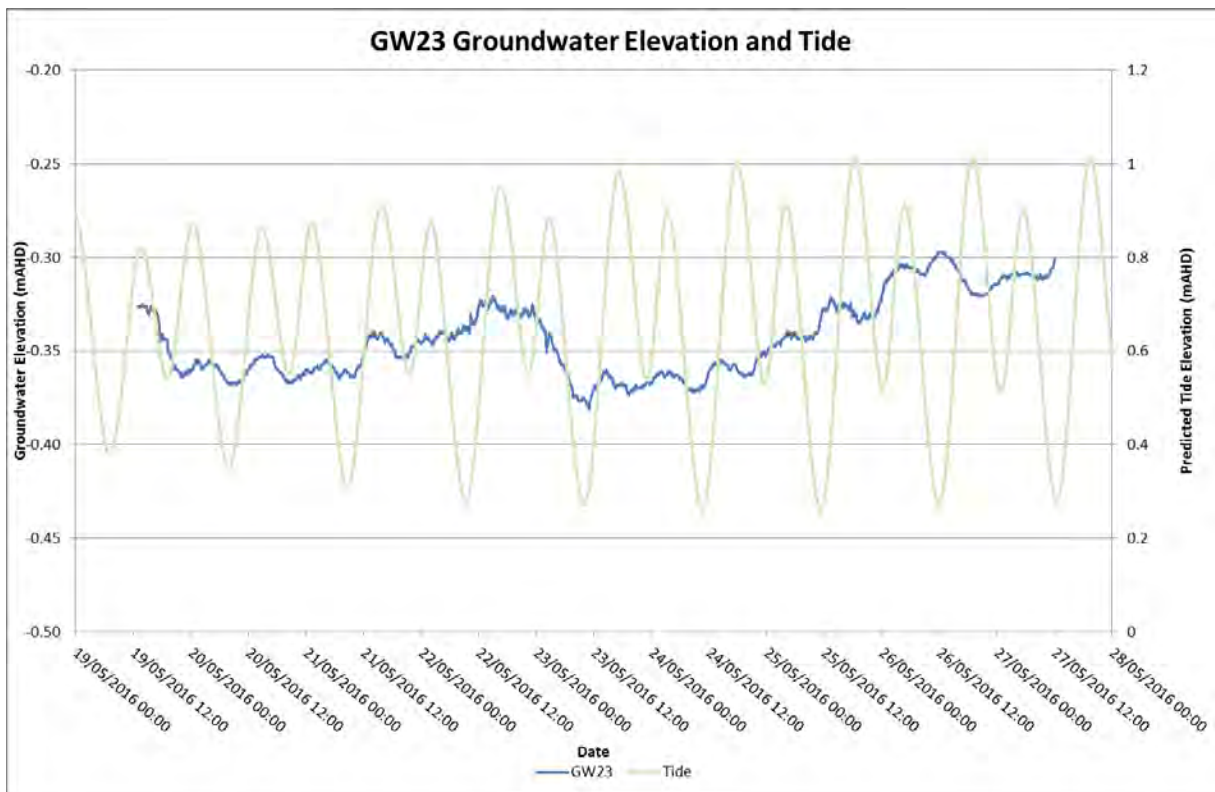
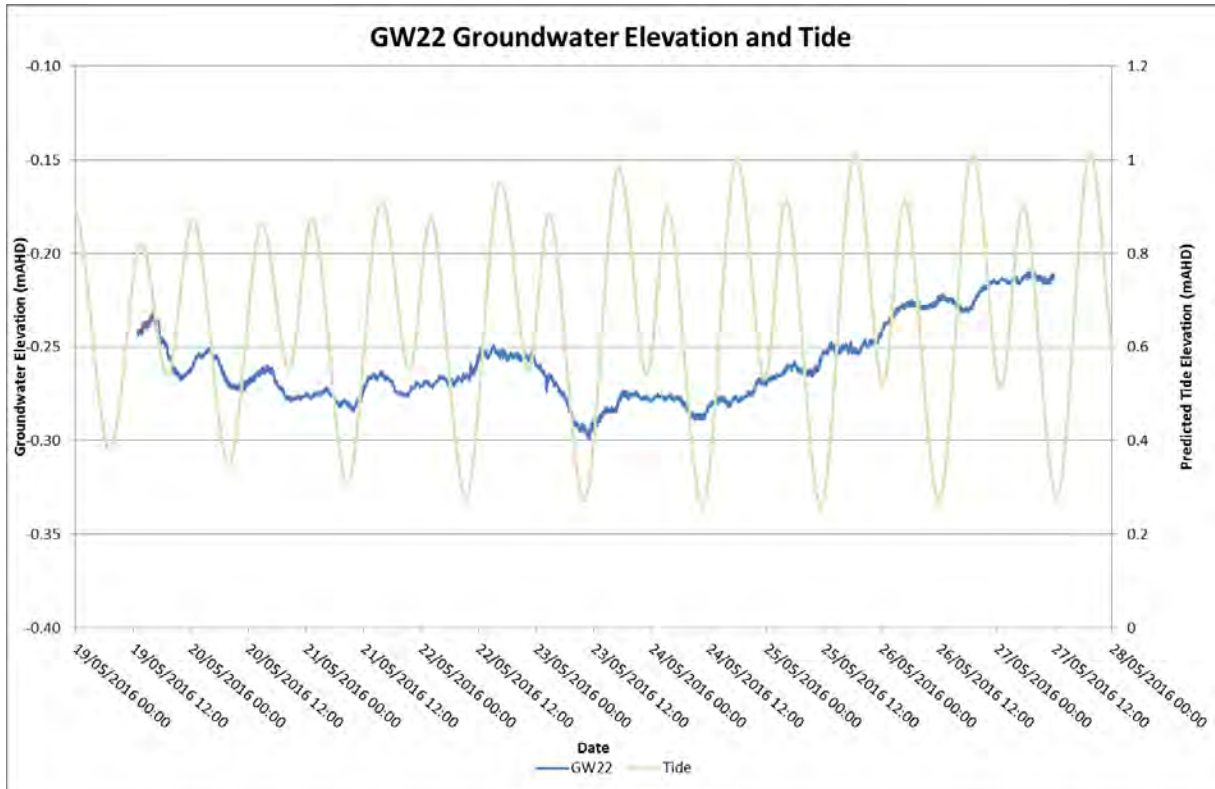
All wells with the exception of GW03, GW13 and GW33 showed a response to a significant rainfall event that occurred on 25 May to 26 May 2016. BoM's Olympic Park weather station recorded 12.4 mm of rain in the 24 hours up to 9 am on 26 May 2016. Wells GW14, GW24 and GW31 showed the greatest responses to the rainfall event with groundwater elevations increasing by more than 0.1 m.

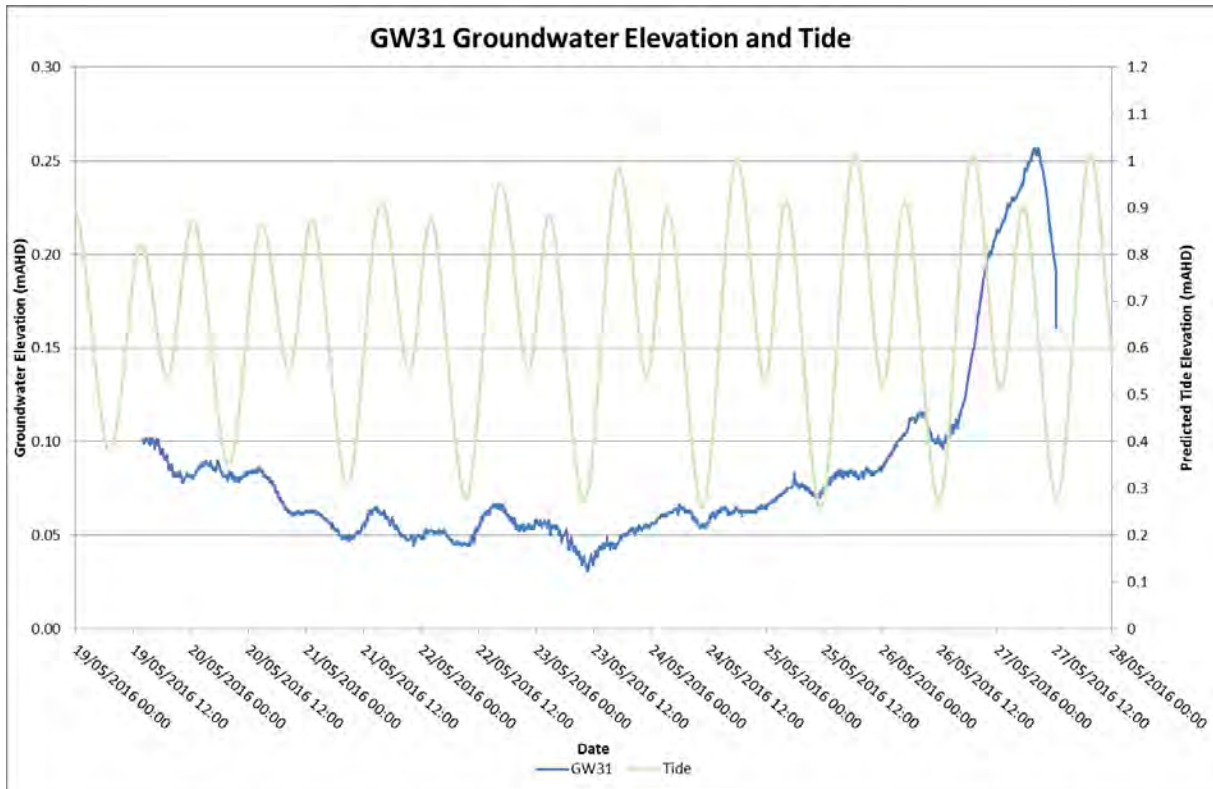
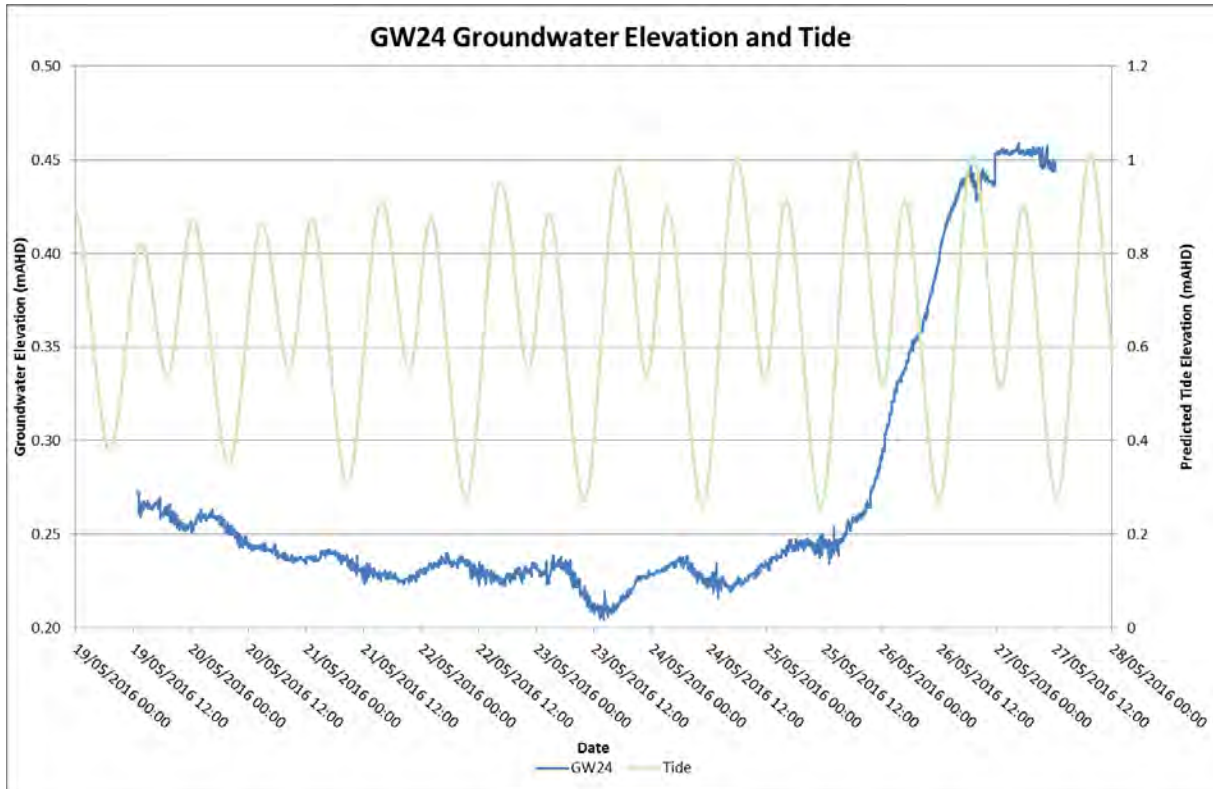


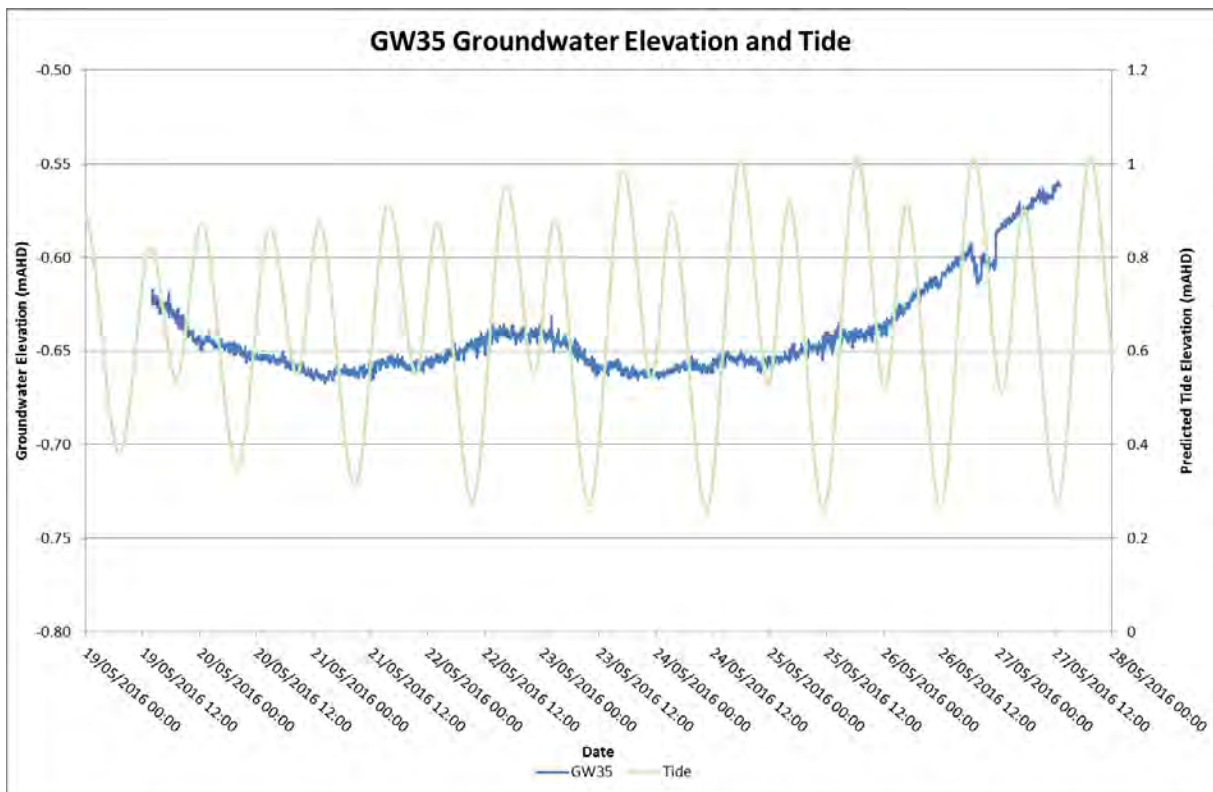
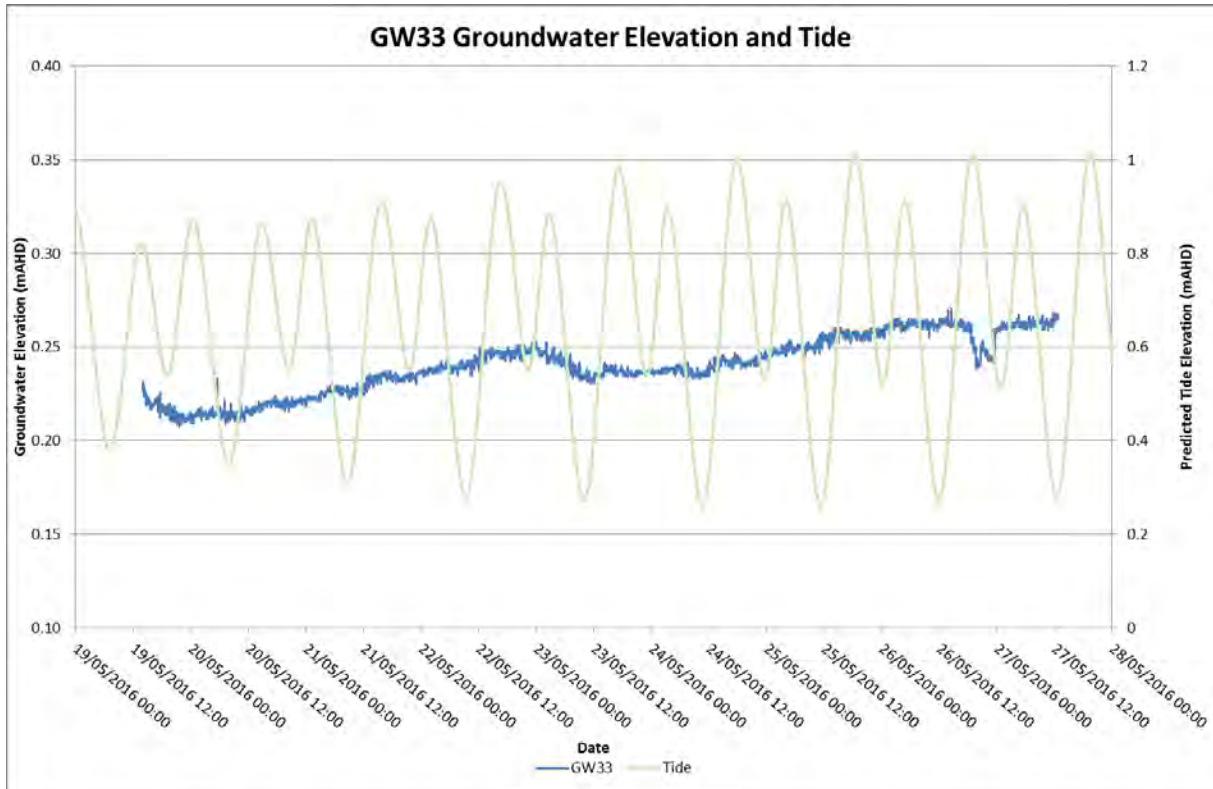












5.3 Potential Groundwater Flow Anomalies

Based on our assessment of the preliminary 2015 GME1 gauging data, there were no obvious 'localised' anomalies and the data set was not further separated when assessing possible regional background groundwater conditions. However, it was found that there are many physical features across the site that could act as preferential flow pathways, including:

- Former swamps and wetlands.
- The local sewer network across the site, noting that the main sewers are positioned well below the shallow groundwater table, as discussed below.
- The drainage and stormwater system.
- Former quarries/landfills.

As described in **Section 5.2**, the 2016 GME2 groundwater contours and flow direction are consistent with the 2015 GME1 findings. As such, the same potential groundwater flow anomalies are present. In short, this indicates that shallow groundwater is likely draining to local sewer and/or stormwater systems in the south eastern portion of the site. The Melbourne Main is understood to be present in this area, however, it is unlikely that shallow groundwater is draining through this particular system as the anticipated depth is between 10 and 15mBGL.

AECOM reviewed the surrounding land uses and groundwater well network in this area of the site in the Baseline Groundwater Assessment Report (March 2016) and it is unclear what is influencing the apparent drainage described above. It appears to be widespread and a regional influence may be a key factor.

As concluded during the 2015 GME1, there are no obvious localised anomalies with the addition of the 2016 GME2 data.

5.4 General Chemistry of Shallow Groundwater

The GME1 results indicated that groundwater across the site was mostly Ca/Na- HCO₃ dominant, with Na-Cl dominant groundwater occurring along the north eastern portion of the site. The Na-Cl dominant groundwater wells (i.e. GW15, GW18 and GW19) also reported TDS concentrations relative to seawater (21,400 to 30,300mg/L TDS).

Charts 1 and 2 below show the November 2015 GME1 piper plot and the May 2016 GME2 piper plot respectively. As seen in both charts and **Figure 5**, the groundwater type across the site follows a similar trend to that observed in GME1. The proportions of ions, especially anions are again highly varied across the remainder of the site (i.e. in those groundwater wells that have not exhibited a Ca/Na- HCO₃ or Na-Cl dominant water type).

Following the 2015 GME1, it was concluded that groundwater at location GW14 was likely to have been strongly influenced by a fresh water source at the time of sampling and as such, this data point was considered separately to the overall regional data set when assessing possible regional background conditions.

It was further acknowledged that there were a number of possible anomalies in the ionic chemistry reported within the remainder of the data set and that the north eastern areas of the site may be influenced by mixing with the Yarra River (i.e. Na-Cl dominant groundwater). However, given that the data set was limited, the remainder of the data set was not separated further when assessing possible regional background conditions.

The results from GME2 indicate that laboratory pH and TDS concentrations generally correlate well with the field measured pH and EC data. Field pH was found to range between 2.96 (GW30) to 7.48 (GW38), while laboratory pH ranged between 2.98 (GW30) and 8.04 (GW38). Field EC was reported as 220 (GW14) to 36,800uS/cm (GW18), while laboratory TDS ranged between 331 (GW14) and 24,200 mg/L (GW15).

These TDS results are similar to those reported during GME1. The largest TDS changes between the 2015 GME1 and the 2016 GME2 are as follows:

- GW04: 787 mg/L (2015) to 1,120 mg/L (2016)
- GW06: 1,550 mg/L (2015) to 3,360 mg/L (2016)
- GW15: 30,300 mg/L (2015) to 24,200 mg/L (2016)
- GW28: 1,200 mg/L (2015) to 2,120 mg/L (2016)

Two groundwater wells (GW11 and GW14) reported a TDS concentration <500mg/L. Location GW14 is located on the northern boundary near the Yarra River, while GW11 is located along the southern boundary in the Wirraway sub-precinct. The next lowest TDS concentration was reported as 557 mg/L in GW10, which is located towards the southern boundary of the site, approximately 800 m from GW14 and 700 m from GW11.

A TDS concentration below 500mg/L in the shallow groundwater at the site is considered to be possibly representative of a fresh water source leaking from a nearby service. It is particularly unusual for groundwater within groundwater well GW14 to report a TDS concentration <500mg/L given its close proximity to the Yarra River, which is known to be a partially mixed estuary. This was also noted in the 2015 GME1. It is noted that groundwater within groundwater well GW13 and GW16 (within close proximity of GW14) reported TDS concentrations of 612 and 706 mg/L respectively. Contrary to this, the next closest wells to GW14 (i.e. GW15 and GW19) reported TDS as 24,200 and 20,600 mg/L respectively. Based on the TDS data alone and when reviewing the low TDS values across the remainder of the site, it is difficult to conclude that any trends in the spatial distribution of fresh water are present (**Figure 5**). This is consistent with the findings described in the Baseline Groundwater Assessment Report (March, 2016).

Based on the laboratory reported TDS values:

- 2 groundwater well corresponds with Segment A1.
- 8 groundwater wells correspond with Segment A2.
- 22 groundwater wells correspond with Segment B.
- 3 groundwater wells correspond with Segment C.
- 3 groundwater wells correspond with Segment D.

In summary, the most sensitive groundwater segment that may be applicable at the site (based on TDS concentrations reported to date) is Segment A2 (501-1,000mg/L). The two data points (GW11 and GW14) that reported TDS concentrations <500mg/L are likely to have been influenced by a fresh water source. Segment A2 requires the protection of Potable Water Supply - Acceptable, which aligns with the most conservative guidelines.

It is noted that all but three groundwater wells appear to be installed within the same formation (as described above), and based on the tidal data obtained (**Section 4.1.5**) groundwater does not appear to be strongly influenced by tides at the locations investigated. The following points of interest are noted regarding the 3 wells installed in different formations:

- Well GW19 (installed into CIS material) exhibited TDS concentrations ranging between 20,600 and 21,400 mg/L.
- Wells GW37 and GW38 (installed in Older Volcanic material) exhibited quite different TDS concentrations. GW37 ranged between 839 and 914 mg/L, while GW38 ranged between 3,360 and 3,680 mg/L.

The following conclusions can be made based on the ionic chemistry obtained in the 2015 GME1 and the 2016 GME2:

- Locations GW11 and GW14 have been strongly influenced by a fresh water source at the time of sampling and should be considered an anomaly and not representative of regional groundwater conditions.
- Variability in TDS across the site may be due to the following:
 - Underground infrastructure and leaking services.
 - The presence of former quarries and landfills across the site which are likely to respond inconsistently in terms of rainfall infiltration.'
 - The presence of the Yarra River to the immediate north of the site.

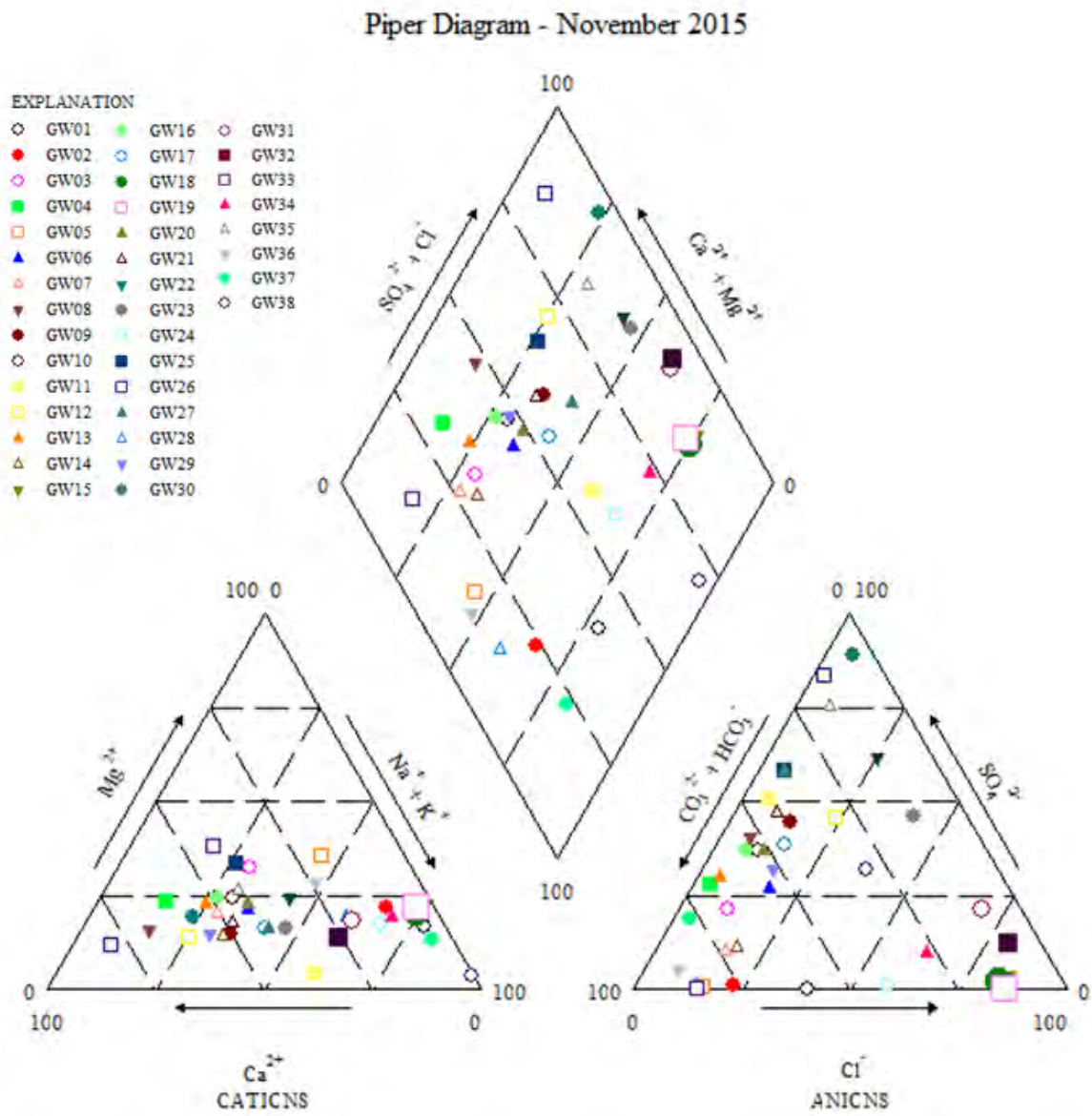


Chart 1 November 2015 GME1 Piper Plot

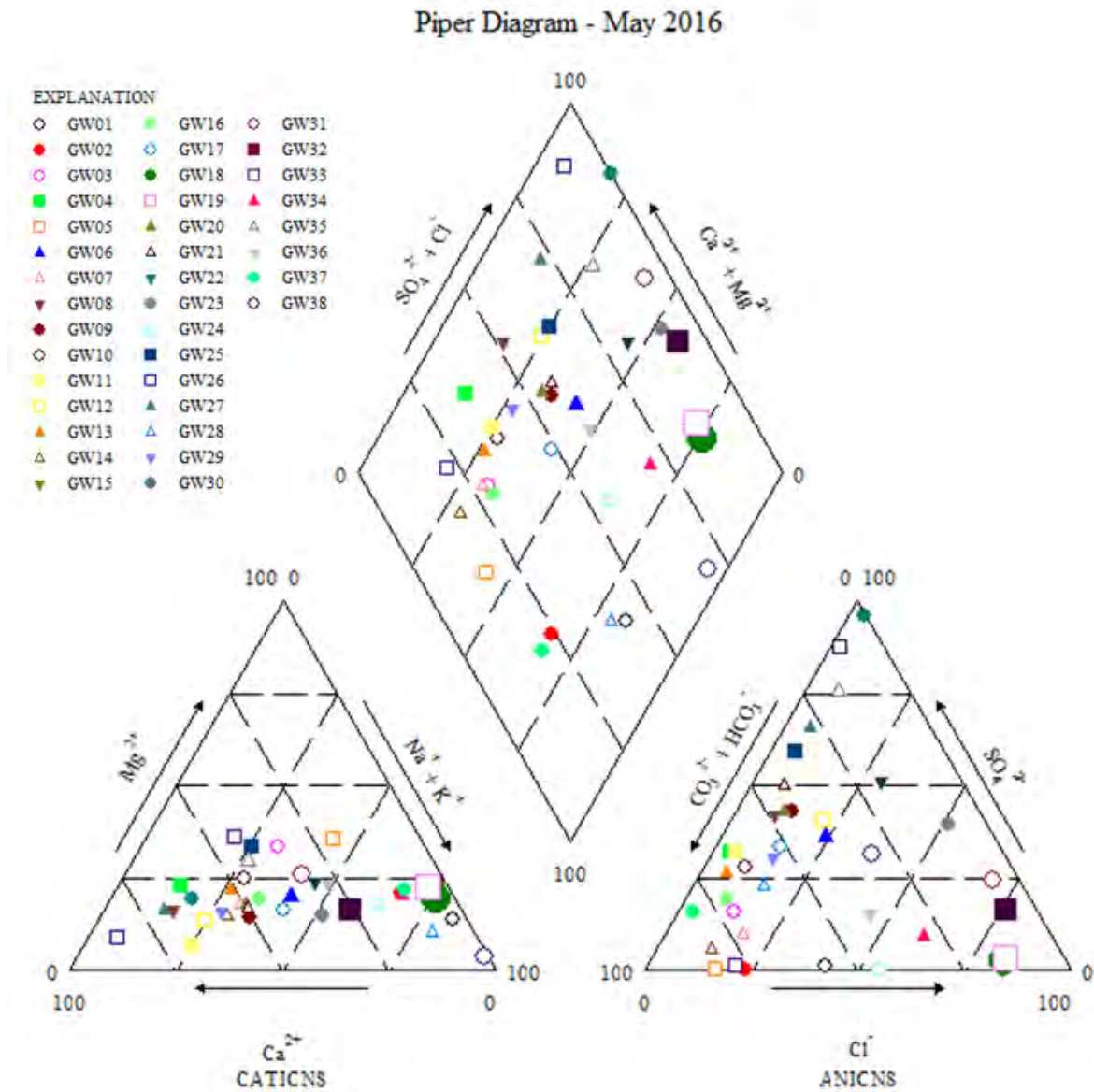


Chart 2 March 2016 GME2 Piper Plot

5.5 Detected Contaminants of Potential Concern

Groundwater results have been tabulated against applicable guidelines within **Appendix D**, whilst laboratory transcripts are provided in **Appendix C**.

Based on the 2015 GME1, the following groundwater CoPC were considered likely to trigger further assessment in relation to assessments and environmental audits associated with future redevelopment of the site:

- Ammonia as N: Likely to be a diffuse source or co-source that is regionally elevated.
- Chloride: Considered regionally elevated background conditions.
- Nitrate (as N): Likely to be a diffuse source that is regionally elevated.
- Sulfate as SO₄: Considered regionally elevated background conditions.
- TDS: Considered regionally elevated background conditions.

- Arsenic: Considered regionally elevated background conditions.
- Iron: Considered regionally elevated background conditions.
- Manganese: Considered regionally elevated background conditions.
- Nickel: Considered regionally elevated background conditions.

Table 4 provides a summary of the CoPC that have been detected in groundwater during both GME's.

Note that there are a number of groundwater wells that underwent analysis for volatile organic compounds (VOC) in the 2016 GME2, however, VOC's were not analysed at these locations in the 2015 GME1. These groundwater wells are GW03, GW05-GW09, GW11, GW13, GW15, GW017, GW19, GW20, GW22, GW23, GW25, GW26, GW29-GW35 and GW37.

The following summarises the information in **Table 4**:

- The majority of CoPC detected in specific wells during the 2015 GME1 were detected in the same wells during the 2016 GME2. The significant differences to note are associated with organic CoPC as follows:

CoPC detected in the 2016 GME2 but not detected in the 2015 GME1:

- GW03: TPHC_{16-C34}
- GW07: TPHC_{10-C40}
- GW11: TPHC_{6-C10} and TRHC_{6-C9}

CoPC detected in the 2015 GME1 but not detected in the 2016 GME2:

- GW22: Petroleum Hydrocarbons (TRH C_{10-C36}, TPH C_{10-C40})
- GW29: Petroleum Hydrocarbons (TRH C_{10-C36})
- GW30: Petroleum Hydrocarbons (TRH C_{10-C36}, TPH C_{10-C40})
- GW28: Petroleum Hydrocarbons (TRH C_{6-C9}, TRH C_{10-C36}, TPH C_{6-C10}, TPH C_{10-C40})
- GW24: PAH (Acenaphthene)
- GW35: Petroleum hydrocarbons (TRH C_{10-C36}, TPH C_{15-C40})

CoPC not analysed in the 2015 GME1, but analysed and detected in the 2016 GME2:

- GW15: Solvents (acetone and carbon disulphide)
- GW23: Chlorinated Hydrocarbons (cis-1,2,dichloropropene)
- GW24: MAH (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, Isopropylbenzene)
- GW25: Chlorinated Hydrocarbons (cis-1,2,dichloroethene)
- GW28: Solvents (carbon disulphide)
- GW32:
 - BTEX and MAH (benzene, ethylbenzene, toluene, xylene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, Isopropylbenzene, n-butylbenzene and n-propylbenzene)
 - PAH (acenaphthene, fluorene, naphthalene and phenanthrene)
 - Solvents (carbon disulfide)
 - Petroleum hydrocarbons (F2-Naphthalene, TRH C_{6-C9}, TPH C_{6-C10}, TRH C_{10-C36}, TPH C_{10-C40})

CoPC detected in the 2015 GME1 and not analysed in the 2016 GME2:

- GW14: Chloroform
- GW18: Solvents (carbon disulfide)
- GW19: Solvents (acetone, carbon disulfide)

To summarise the information above:

- There are a number of inorganic compounds that were either detected in the 2015 GME1 and not detected in the 2016 GME2, or detected in the 2016 GME2 and not detected in the 2015 GME1. There is no obvious trend associated with these changes and none of the associated exceedences are significant (as seen in **Appendix D**).
- Petroleum hydrocarbon (TPH/TRH) fractions have fluctuated (both up and down) since the 2015 GME1, however, they are mostly the non volatile fractions, and there are few guideline exceedences (**Appendix D**). Key observations include:
 - GW01 exceeded ecosystem petroleum hydrocarbons (non volatile fraction) guidelines during both GME's.
 - GW02 exceeded ecosystem petroleum hydrocarbons (non volatile fraction) guidelines during the 2015 GME1, but not in the 2016 GME2.
 - GW24 exceeded ecosystem petroleum hydrocarbons (non volatile fraction) guidelines during the 2015 GME1, but not in the 2016 GME2.
 - GW32 (installed by a third party prior to the 2015 Baseline Groundwater Assessment) was not analysed for petroleum hydrocarbons in the 2015 GME1, however, both the volatile and non-volatile petroleum hydrocarbons fractions were reported to exceed ecosystem guidelines in the 2016 GME2.
- Groundwater within groundwater well GW01 was deemed to be representative of a localised soil source of contamination in the 2015 GME1. Based on the detections described above in the 2016 GME2, it is likely that groundwater in GW32 is also associated with a localised source of contamination.

5.5.1 Statistical Analysis

Table 5 provides a statistical summary of groundwater CoPC that reported concentrations in excess of Potable Water Supply – Acceptable over the course of the two GME's, as this is considered the most sensitive groundwater segment applicable at the site. These are also considered to be the CoPC at the site which are most likely to trigger further investigation during future assessments/environmental audits.

Note that CoPC with <10 detections are likely to indicate that the relevant CoPC is associated with specific sources. Hence, CoPC with <10 detections are not included in **Table 5**.

The same statistical process was conducted as part of the 2015 assessment. After combining the 2015 and 2016 data, the statistical summary has changed as follows:

- F, Al and Pb have now been incorporated into the table, as these CoPC have >10 detections and exceed the Potable Water guidelines at 1 or more locations.
- The maximum concentrations for each of the CoPC have remained similar to the 2015 results with the exception of ammonia, which has increased from 78,100 mg/L to 106,000 mg/L.

A list of CoPC considered to potentially trigger further consideration in relation to future redevelopment of the site was provided in AECOM (March, 2016). Following the addition of the 2016 GME data, the list has been updated as follows:

- Ammonia as N – likely from a diffuse source or co-source that is regionally elevated.
- Chloride – Considered to be regionally elevated in background conditions.
- Fluoride – Possibly regionally elevated from utility leaks.
- Nitrate as N – Likely a diffuse source that is regionally elevated.
- Sulfate as SO₄ – Considered regionally elevated background conditions.
- TDS – Considered regionally elevated in background conditions.
- Aluminium – Considered to be regionally elevated in background conditions.
- Arsenic – Considered regionally elevated in background conditions.
- Iron – Considered regionally elevated in background conditions.
- Lead – Considered to be regionally elevated due to deposition of atmospheric pollutants.

- Manganese – Considered regionally elevated in background conditions.
- Nickel – Considered regionally elevated in background conditions.

Table 4 Detectable CoPC in shallow groundwater (2015 and 2016 GME)

Well	Analytes detected in GME1 (2015) CoPC in bold not detected in GME2	Analytes detected in GME2 (2016) CoPC in bold not detected in GME1
GW01	<p>Nutrient ions (Ammonia, Nitrate, Phosphorous, total oxidised sulfur, total organic carbon).</p> <p>Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)</p> <p>Chlorinated hydrocarbons (Chlorobenzene, 1,4-dichlorobenzene, Benzene, Toluene, Xylene [m&p])</p> <p>Petroleum hydrocarbons (1,2,4-trimethylbenzene, Isopropylbenzene, F2-Naphthalene, TPH C₁₀₋₄₀, TRH C_{10-C₃₆})</p> <p><i>Note: Based on the soil data in AECOM (March 2016), the groundwater results at this location appear to be associated with a localised soil source.</i></p>	<p>Nutrient ions (Ammonia, Nitrate, total oxidised sulfur, SO4)</p> <p>Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)</p> <p>Toluene</p> <p>TPH C₆₋₄₀, TRH C_{6-C₃₆}</p> <p>Total organic carbon not analysed</p> <p>Chlorinated hydrocarbons not analysed</p>
GW02	<p>Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur)</p> <p>Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium)</p> <p>Chlorinated hydrocarbons (Chlorobenzene)</p> <p>Petroleum hydrocarbons (Isopropylbenzene, n-propylbenzene, p-isopropyltoluene, F2-Naphthalene, TPH C₆₋₄₀, TRH C_{10-C₃₆})</p>	<p>Nutrient ions (Ammonia, Total oxidised sulfur)</p> <p>Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)</p> <p>Petroleum hydrocarbons (F2-Naphthalene, TPH C₆₋₄₀, TRH C_{6-C₃₆})</p> <p>Isopropylbenzene and n-propylbenzene, p-isopropyltoluene not analysed</p> <p>Chlorinated hydrocarbons not analysed</p>
GW03	<p>Nutrient ions (Ammonia, Nitrate, SO₄, Total oxidised sulfur)</p> <p>Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)</p> <p>Chlorinated hydrocarbons (Benzene)</p> <p>Petroleum hydrocarbons (Phenathrene)</p>	<p>Nutrient ions (Ammonia, Nitrate, Nitrite, SO₄, Total oxidised sulfur)</p> <p>Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)</p> <p>Petroleum hydrocarbons (TPH C₁₆ – C₃₄.)</p>
GW04	<p>Nutrient ions (Ammonia, Nitrate, SO₄, Total oxidised sulfur, Total organic carbon)</p> <p>Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)</p>	<p>Nutrient ions (Ammonia, Nitrate, SO₄, Total oxidised sulfur)</p> <p>Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)</p> <p>Total organic carbon not analysed</p>

Well	Analytes detected in GME1 (2015) CoPC in bold not detected in GME2	Analytes detected in GME2 (2016) CoPC in bold not detected in GME1
GW05	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Petroleum hydrocarbons (TPH C ₁₀₋₄₀ , TRH C _{10-C36})	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Iron, Lead , Magnesium, Manganese, Nickel, Potassium, Zinc) Petroleum hydrocarbons (TPH C ₁₀₋₄₀ , TRH C _{10-C36})
GW06	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Nitrate, Nitrite , SO ₄ , Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Copper , Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Petroleum hydrocarbons (TPH C₁₀₋₄₀, TRH C_{10-C36}) Total organic carbon not analysed
GW07	Nutrient ions (Ammonia, Nitrate, SO ₄ , Phosphorous , Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Nitrate, SO ₄ , Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Lead , Magnesium, Manganese, Nickel, Potassium, Zinc) Petroleum hydrocarbons (TPH C₁₀₋₄₀, TRH C_{10-C36})
GW08	Nutrient ions (Ammonia, Nitrate, SO ₄ , Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Nitrate, Nitrite , SO ₄ , Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium)
GW09	Nutrient ions (Ammonia, Nitrate , SO ₄ , Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Aluminium , Arsenic , Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, SO ₄ , Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium)
GW10	Nutrient ions (Ammonia, Nitrate , SO ₄ , Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, SO ₄ , Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Copper, Iron, Lead , Magnesium, Manganese, Nickel, Potassium, Zinc) Total organic carbon not analysed

Well	Analytes detected in GME1 (2015) CoPC in bold not detected in GME2	Analytes detected in GME2 (2016) CoPC in bold not detected in GME1
GW11	Nutrient ions (Ammonia, SO ₄ , Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium , Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Nitrate , Reactive P , SO ₄ , Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Cis-1,2-dichloroethene Petroleum hydrocarbons (TPH C₆-C₁₀, TRH C₆-C₉)
GW12	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Arsenic, Copper , Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)
GW13	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Copper , Iron, Lead , Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)
GW14	Nutrient ions (Ammonia , Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium , Arsenic, Calcium, Copper, Iron , Magnesium, Manganese, Nickel, Potassium, Zinc) Chlorinated Hydrocarbons (Chloroform)	Nutrient ions (Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Copper, Magnesium, Manganese, Nickel, Potassium, Zinc) Chlorinated Hydrocarbons not analysed
GW15	Nutrient ions (Ammonia, Nitrate, Nitrite , Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Copper, Iron, Magnesium, Manganese, Nickel, Potassium) Petroleum Hydrocarbons (TRH C ₁₀ -C ₃₆ , TPH C ₁₀ -C ₄₀) Solvents not analysed	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Petroleum Hydrocarbons (TRH C ₁₀ -C ₃₆ , TPH C ₁₀ -C ₄₀) Solvents (Acetone, Carbon Disulfide)
GW16	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium , Iron, Lead , Magnesium, Manganese, Nickel, Potassium, Zinc)

Well	Analytes detected in GME1 (2015) CoPC in bold not detected in GME2	Analytes detected in GME2 (2016) CoPC in bold not detected in GME1
GW17	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium)	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium)
GW18	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Magnesium, Manganese, Nickel, Potassium) Petroleum Hydrocarbons (F2-Naphthalene, TRH C ₁₀ -C ₃₆ , TPH C ₁₀ -C ₄₀) Solvents (Carbon Disulfide)	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron , Magnesium, Manganese, Nickel, Potassium) Petroleum Hydrocarbons (TRH C ₁₀ -C ₃₆ , TPH C ₁₀ -C ₄₀) Solvents not analysed
GW19	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Copper , Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Petroleum Hydrocarbons (TRH C ₁₀ -C ₃₆ , TPH C ₁₀ -C ₄₀) Solvents (Acetone, Carbon Disulfide)	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Petroleum Hydrocarbons (TRH C ₁₀ -C ₃₆ , TPH C ₁₀ -C ₄₀) Solvents not analysed
GW20	Nutrient ions (Ammonia, Nitrite, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Nitrate , Nitrite, Reactive P , Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)
GW21	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium) Petroleum Hydrocarbons (TRH C ₁₀ -C ₃₆ , TPH C ₁₀ -C ₄₀)	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Petroleum Hydrocarbons (TRH C ₁₀ -C ₃₆ , TPH C ₁₀ -C ₄₀)

Well	Analytes detected in GME1 (2015) CoPC in bold not detected in GME2	Analytes detected in GME2 (2016) CoPC in bold not detected in GME1
GW22	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Cadmium, Calcium, Chromium, Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Zinc) Petroleum Hydrocarbons (TRH C₁₀-C₃₆, TPH C₁₀-C₄₀)	Nutrient ions (Ammonia, Nitrate, Nitrite , Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Cadmium, Calcium, Chromium, Copper , Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Zinc)
GW23	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic , Calcium, Chromium, Copper , Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Chlorinated Hydrocarbons not analysed	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Chlorinated Hydrocarbons (Cis-1,2,dichloropropene)
GW24	Nutrient ions (Ammonia, Nitrate, Phosphorous , SO₄ , Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Chlorinated hydrocarbons (Benzene , Toluene , Xylene [m&p]) Petroleum Hydrocarbons (F2-Naphthalene, TRH C₆-C₉ , TPH C ₆ -C ₁₀ , TRH C ₁₀ -C ₃₆ , TPH C ₁₀ -C ₄₀) PAH (Acenaphthene) MAH not analysed	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Chlorinated hydrocarbons (Xylene [m&p]) Petroleum Hydrocarbons (F2-Naphthalene, TPH C ₆ -C ₁₀ , TRH C ₁₀ -C ₃₆ , TPH C ₁₀ -C ₄₀) MAH (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, Isopropylbenzene)
GW25	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium , Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Chlorinated Hydrocarbons not analysed	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Cadmium , Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Chlorinated Hydrocarbons (Cis-1,2,dichloroethene)
GW26	Nutrient ions (Ammonia, Nitrate, Nitrite , Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)

Well	Analytes detected in GME1 (2015) CoPC in bold not detected in GME2	Analytes detected in GME2 (2016) CoPC in bold not detected in GME1
GW27	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc).	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic , Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc).
GW28	Nutrient ions (Ammonia, Nitrate, Nitrite , Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium , Arsenic, Calcium, Chromium, Copper , Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Chlorinated hydrocarbons (Benzene , Toluene) Solvents (Carbon Disulfide) Petroleum Hydrocarbons (TRH C₆-C₉, TRH C₁₀-C₃₆, TPH C₆-C₁₀, TPH C₁₀-C₄₀)	Nutrient ions (Ammonia, Nitrate, Phosphorous , Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium) Solvents not analysed
GW29	Nutrient ions (Ammonia, Nitrate, Nitrite , Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium , Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Petroleum Hydrocarbons (TRH C₁₀-C₃₆)	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Copper , Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)
GW30	Nutrient ions (Ammonia, Nitrate , Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Petroleum Hydrocarbons (TRH C₁₀-C₃₆, TPH C₁₀-C₄₀)	Nutrient ions (Ammonia, Nitrite , Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride , Sodium, Aluminium, Arsenic, Cadmium , Calcium, Chromium, Copper , Iron, Lead , Magnesium, Manganese, Nickel, Potassium, Zinc)
GW31	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Chromium , Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)

Well	Analytes detected in GME1 (2015) CoPC in bold not detected in GME2	Analytes detected in GME2 (2016) CoPC in bold not detected in GME1
GW32	Nutrient ions (Ammonia, Nitrate , Phosphorous, Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) BTEX not analysed MAH not analysed PAH not analysed Solvents not analysed Petroleum Hydrocarbons not analysed	Nutrient ions (Ammonia, Phosphorous, Total oxidised sulfur) Inorganics (Chloride, Fluoride, Sodium, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) BTEX (Benzene, Ethylbenzene, Toluene, Xylene) MAH (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, Isopropylbenzene, n-butylbenzene, n-propylbenzene) PAH (Acenaphthene, Fluorene, Naphthalene, Phenanthrene) Solvents (Carbon Disulfide) Petroleum Hydrocarbons (F2-Naphthalene, TRH C₆-C₉, TPH C₆-C₁₀, TRH C₁₀-C₃₆, TPH C₁₀-C₄₀)
GW33	Nutrient ions (Ammonia, Nitrate , Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium , Arsenic, Calcium, Copper , Iron, Lead , Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Total oxidised sulfur , Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium)
GW34	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium , Arsenic, Calcium, Chromium , Copper, Iron, Magnesium, Manganese, Nickel, Potassium)	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Copper, Iron, Magnesium, Manganese, Nickel, Potassium)
GW35	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc) Petroleum Hydrocarbons (TRH C₁₀-C₃₆, TPH C₁₅-C₄₀)	Nutrient ions (Ammonia, Nitrate, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Arsenic, Calcium, Chromium , Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)
GW36	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Lead , Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Chromium, Iron, Magnesium, Manganese, Nickel, Potassium, Zinc)

Well	Analytes detected in GME1 (2015) CoPC in bold not detected in GME2	Analytes detected in GME2 (2016) CoPC in bold not detected in GME1
GW37	Nutrient ions (Ammonia, Nitrate, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Copper, Lead, Magnesium, Manganese, Nickel, Potassium, Zinc)	Nutrient ions (Ammonia, Nitrate, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Copper, Iron , Lead, Magnesium, Manganese, Nickel, Potassium, Zinc)
GW38	Nutrient ions (Ammonia , Nitrate, Nitrite , Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Copper, Lead, Magnesium, Manganese, Nickel, Potassium)	Nutrient ions (Nitrate, Phosphorous, Total oxidised sulfur, Total organic carbon) Inorganics (Chloride, Fluoride, Sodium, Aluminium, Arsenic, Calcium, Copper, Lead, Magnesium, Manganese, Nickel, Potassium, Zinc)

Table 5 Summary of CoPC in groundwater in excess of Potable Water Supply guidelines (minimum of 10 detectable concentrations)

Statistical Summary	Ammonia (as N)	Cl	F	Nitrate (as N)	Sulfate as SO4	Na	TDS	Al	As	Fe	Pb	Mn	Ni
No. of Results	76	76	76	76	76	76	76	76	76	76	76	76	76
No. of Detects	74	76	75	68	72	76	76	56	71	71	10	76	74
Min. Conc.	<10	11	<0.1	<0.01	<1	13	331	<0.01	<0.001	<0.05	<0.001	0.001	<0.001
Min. Detect	20	11	0.1	0.01	2	13	331	0.01	0.001	0.05	0.001	0.001	0.004
Max. Conc.	106,000	12,300	1.9	16.4	2,110	7,680	30,300	12.5	0.076	110	0.011	3.34	0.541
Max. Detect	106,000	12,300	1.9	16.4	2,110	7,680	30,300	12.5	0.076	110	0.011	3.34	0.541
Avg. Conc.	10,806	1,284	0.54	0.38	405	825	3595	0.2	0.0083	10	0.00092	0.38	0.035
Median Conc.	3,035	115	0.5	0.03	260.5	154	1330	0.025	0.004	5.465	0.0005	0.2515	0.0205
Std Dev	20,751	3,154	0.34	1.9	433	1815	6,287	1.4	0.012	16	0.0015	0.55	0.065
No. of Exceedances of 'Potable Water Supply' Guidelines	58	24	1	1	41	36	72	4	15	16	1	55	38

6.0 Conclusions

The objectives of the 2016 GME2 are to:

- Compare GME1 and GME2 field and laboratory data and identify any points of difference.
- Further assess the potential for tides to impact groundwater conditions across a broader area of the site.
- Summarise any additional knowledge in relation to baseline shallow groundwater quality identified in GME1.
- Summarise any additional knowledge in relation to beneficial uses of shallow groundwater identified in GME2.

With consideration of the findings from the 2015 GME1, the following conclusions can be made following completion of the 2016 GME2.

Comparison of GME1 and GME2 Field Data:

- In general, the water levels reported during the 2016 GME2 aligned well with the 2015 GME1 water levels, and there are no significant fluctuations. The 2016 GME2 groundwater levels typically ranged between 0.82 and 3.55 mTBOC across the site.
 - There does not appear to be any obvious trends with groundwater levels across the site.
 - This is likely to be due to the various site activities and surface coverage of land that are considered to be affecting the extent of recharge of the shallow aquifer differently across the site.
 - Further, shallow underground infrastructure is expected to create artificial recharge (via leakage at points that are shallower than groundwater) and preferential flow paths (via groundwater draining at points that are deeper than groundwater).
 - The groundwater across the site was found to generally flow in a southerly direction in the 2016 GME2, which is consistent with the 2015 GME1 findings.
 - Given the shallow depth of the upper unconfined aquifer being assessed at the site, it is unlikely that deep underground infrastructure has a significant impact on flow direction.
- The GME1 results indicated that groundwater across the site was mostly Ca/Na- HCO₃ dominant, with Na-Cl dominant groundwater occurring along the north eastern portion of the site.
 - **Charts 1, 2, and Figure 5** shows that the groundwater type across the site follows a similar trend to that observed in GME1.
 - The proportions of ions, especially anions are again highly varied across the remainder of the site (i.e. in those groundwater wells that have not exhibited a Ca/Na- HCO₃ or Na-Cl dominant water type).
- The field EC and laboratory TDS results reported during the 2016 GME2 are similar to those reported during the 2015 GME1. Overall, there is considerable variability in TDS across the site which may be due to the following:
 - Underground infrastructure and leaking services.
 - The presence of former quarries and landfills across the site which are likely to respond inconsistently in terms of rainfall infiltration.
 - The presence of the Yarra River to the immediate north of the site.
- Two groundwater wells (GW11 and GW14) reported a TDS concentration <500mg/L (Note that GW14 was the only well to report a TDS <500mg/L in the 2015 GME1).
 - The next lowest TDS concentration reported in GME2 was 557 mg/L in GW10, which is located towards the southern boundary of the site, approximately 800 m from GW14 and 700 m from GW11.
 - TDS concentrations <500mg/L in the shallow groundwater at the site are considered to be representative of a fresh water source leaking from a nearby service.
- Based on the 2016 GME2 laboratory reported TDS values:
 - 2 groundwater well corresponds with Segment A1 (1 groundwater well in 2015)

- 8 groundwater wells correspond with Segment A2 (11 groundwater wells in 2015)
- 22 groundwater wells correspond with Segment B (19 groundwater wells in 2015)
- 3 groundwater wells correspond with Segment C (4 groundwater wells in 2015)
- 3 groundwater wells correspond with Segment D (3 groundwater wells in 2015)
- As seen above, the number of groundwater wells per groundwater segments identified in GME2 are reasonably consistent with those identified in GME1.
- The most sensitive groundwater segment that may be applicable at the site is Segment A2 (501-1,000mg/L) as locations GW11 and GW14 have been strongly influenced by a fresh water source at the time of sampling and should be considered an anomaly.

Comparison of GME1 and GME2 Laboratory Data:

- There are a number of inorganic compounds that were either detected in GME1 and not detected in GME2, or detected in GME2 and not detected in GME1. There is no obvious trend associated with these changes and none of the changes are considered to be significant as the relative percent differences (RPD's) between the GME1 and GME2 inorganic data are generally low.
- As requested by EPA, volatile organic compounds (VOC's) were analysed in 14 of the 38 groundwater wells in GME1. The remaining 24 groundwater wells underwent VOC analysis in GME2. This resulted in the detection of the following organic CoPC in GME2 that were not identified in GME1:
 - GW15: Solvents (acetone and carbon disulphide)
 - GW23: Chlorinated Hydrocarbons (cis-1,2,dichloropropene)
 - GW24: MAH (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, Isopropylbenzene)
 - GW25: Chlorinated Hydrocarbons (cis-1,2,dichloroethene)
 - GW28: Solvents (carbon disulphide)
 - GW32:
 - BTEX and MAH (benzene, ethylbenzene, toluene, xylene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, Isopropylbenzene, n-butylbenzene and n-propylbenzene)
 - PAH (acenaphthene, fluorene, naphthalene and phenanthrene)
 - Solvents (carbon disulfide)
 - Petroleum hydrocarbons (F2-Naphthalene, TRH C₆-C₉, TPH C₆-C₁₀, TRH C₁₀-C₃₆, TPH C₁₀-C₄₀)
 - As described in the Baseline Groundwater Assessment Report (March 2016), CoPC with <10 detections are considered to represent specific sources and are not considered to be representative of regional groundwater conditions. The above CoPC have been detected in both GME's <10 times, hence they are potentially associated with specific sources associated with land reclamation and uncontrolled backfill material. Note that no soil data is available for the above locations.
- Petroleum hydrocarbon (TPH/TRH fractions) fluctuated (both up and down) since GME1, however, they are mostly the non volatile fractions, and overall the vast majority of petroleum hydrocarbon concentrations are within applicable guidelines (**Appendix D**). Pertinent observations of detected petroleum hydrocarbons include:
 - GW01 exceeded the ecosystem guidelines for total petroleum hydrocarbons (non volatile fractions) during both GME's.
 - GW02 exceeded the ecosystem guidelines for total petroleum hydrocarbons (non volatile fractions) during GME1, but not in GME2.
 - GW11 detected total petroleum hydrocarbons (volatile fraction) during GME1, but not in GME2.
 - GW24 exceeded ecosystem guidelines for total petroleum hydrocarbons (non volatile fractions) during GME1, but not in GME2.

- GW32 (installed by a third party prior to GME1) was not analysed for total petroleum hydrocarbons during GME1, however, both the volatile and non-volatile petroleum hydrocarbons fractions were reported to exceed ecosystem guidelines in GME2.
- Groundwater within groundwater well GW01 was deemed to be representative of a localised soil source of contamination in GME1. Based on the detections described above, it is likely that groundwater in GW32 is also associated with a localised source of contamination.

Further Tidal Assessment:

- Results of the 2015 GME1 tidal assessment showed that there was consistency in the way the wells responded to changes in tides, indicating the tide was an influencing factor. However, the tidal response in relation to groundwater levels was considered a very minimal reaction within the well locations along the selected transects. These results are consistent with the 2016 GME2 tidal assessment findings as follows:
 - The influence of ocean tides on groundwater elevation appeared to be minimal over the 2016 GME2 monitoring period, which is similar to the observations made in the 2015 GME1. The greatest variations (~0.01 m) were observed in wells GW17 – GW18 (southern boundary of the Lorimer sub-precinct), GW24 and GW31 (north eastern portion of the Sandridge sub-precinct). Proximity to surface water bodies was not found to be a strong influencing factor.
 - The additional influence of a diurnal atmospheric tide was apparent in several of the wells where the groundwater elevation at the predicted high ocean tide in the afternoon was greater than the groundwater elevation during the predicted high ocean tide at night.
 - All wells with the exception of GW03, GW13 and GW33 showed a response to a significant rainfall event that occurred on 25 May to 26 May 2016. BoM's Olympic Park weather station recorded 12.4 mm of rain in the 24 hours up to 9 am on 26 May 2016. Wells GW14, GW24 and GW31 showed the greatest responses to the rainfall event with groundwater elevations increasing by more than 0.1 m.
 - In line with the conclusions of the 2015 GME1, there appears to be some consistency in the way groundwater wells respond to changes in tides across the northern areas of the site in the 2016 GME2. However, it is considered to be very minimal.

Additional knowledge in relation to Baseline Shallow Groundwater Quality identified in GME1:

- Descriptive statistics of CoPC detected at concentrations in excess of the most conservative guideline (Drinking Water) was undertaken following GME1 and GME2, as these are considered to be the CoPC at the site which are most likely to trigger further investigation during future assessments/environmental audits.
- A list of CoPC considered to potentially trigger further consideration in relation to future redevelopment of the site was provided in the Baseline Groundwater Assessment Report using the GME1 data. Following the addition of the GME2 data, the list has been updated as follows (the additional CoPC are italicised):
 - Ammonia as N – likely from a diffuse source or co-source that is regionally elevated.
 - Chloride – Considered to be regionally elevated in background conditions.
 - *Fluoride – Possibly regionally elevated from utility leaks.*
 - Nitrate as N – Likely a diffuse source that is regionally elevated.
 - Sulfate as SO₄ – Considered regionally elevated background conditions.
 - TDS – Considered regionally elevated in background conditions.
 - Aluminium – Considered to be regionally elevated in background conditions.
 - Arsenic – Considered regionally elevated in background conditions.
 - Iron – Considered regionally elevated in background conditions.
 - *Lead – Considered to be regionally elevated due to deposition of atmospheric pollutants.*
 - Manganese – Considered regionally elevated in background conditions.
 - Nickel – Considered regionally elevated in background conditions.

Additional knowledge in relation to Beneficial Uses of Shallow Groundwater identified in GME2:

The beneficial uses identified in GME2 align with those identified in GME1. Based on the GME2 TDS concentrations, the most sensitive segment of groundwater at the site that is likely to require protection in future

assessments/environmental audits is Segment A2 (as defined by the *State Environment Protection Policy (Groundwaters of Victoria) 1997*) which requires the protection of Potable Water Supply – Acceptable and other sensitive beneficial uses. However, the area is serviced by a reticulated water supply, which may limit the need for the use of groundwater as a drinking water supply in the region. Note that the TDS concentrations in two groundwater wells (GW11 and GW14) were found to correspond with Segment A2 in GME2, while the TDS concentration in GW14 (only) was found to correspond with Segment A2 in GME1.

7.0 Limitations

AECOM has performed the services for this project in accordance with its current professional standards for site assessment investigations and remedial activities. The scope of works for the investigation works was limited to that detailed in communications with EPA Victoria.

We do not assume any liability for misrepresentation or items not visible, accessible or present at the subject site during the time of the works. AECOM assumes that all historical information provided by other parties is accurate.

There are no remedial or investigative works which are thorough enough to preclude the presence of material, which presently or in the future, may be considered hazardous at or surrounding the site or at sampling locations. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants presently considered low may, in the future, fall under different regulatory standards that require further remediation.

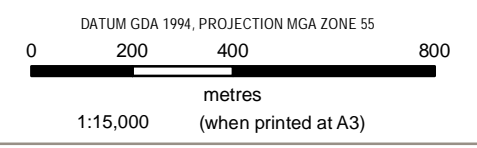
Opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions. This document and the information herein have been prepared for EPA Victoria. This report may not be relied upon by any other party without the explicit written agreement of AECOM. No other warranty, expressed or implied, is made as to the professional advice included in this report.

8.0 References

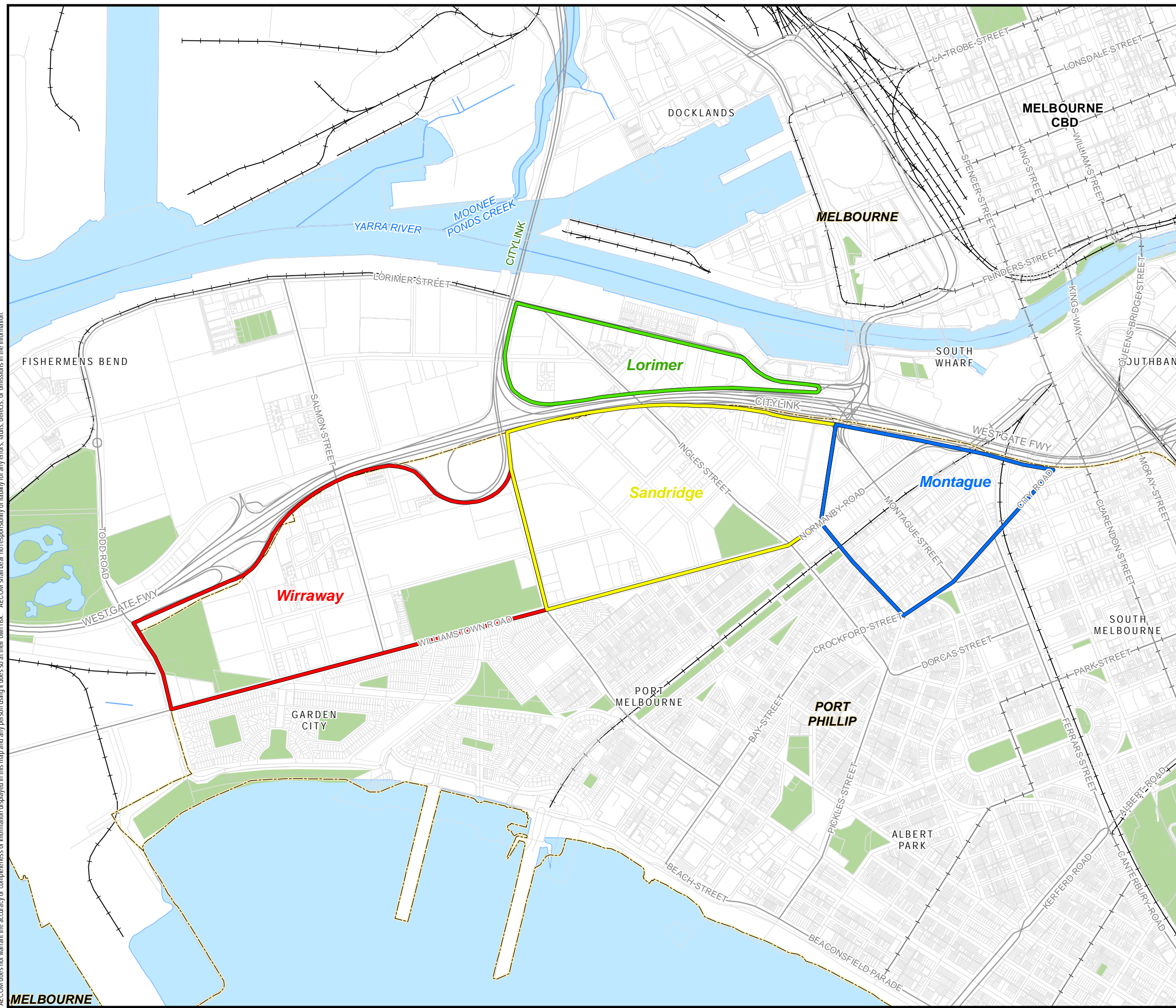
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- Victorian Government (December 1997) *State Environment Protection Policy - Groundwaters of Victoria*
- Victorian Government (June 2002) *State Environment Protection Policy - Prevention and Management of Contamination of Land*
- Victorian Government (August 1997) *State Environment Protection Policy – Schedule F6 Waters of Port Phillip Bay (as varied in 2003)*

Figures

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- LEGEND**
- Lorimer Precinct
 - Montague Precinct
 - Sandridge Precinct
 - Wirraway Precinct
 - LGA Boundary
 - Major Roads
 - Roads
 - Rail
 - Watercourse
 - Waterbody
 - Park/Reserve

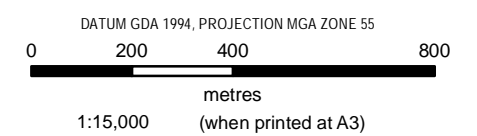


Data sources:
Base Data: (c) 2012 StreetPro
Aerial photography service layer credits:

**SITE LOCATION AND SUB-
PRECINCT BOUNDARIES**

EPA
Groundwater Monitoring Event (May 2016)
Fisherman's Bend Urban Renewal Area

Figure
F1



LEGEND

- Groundwater Well Locations
- Soil samples collected
- Wells marked for Tidal Assessment
- Lorimer Precinct
- Montague Precinct
- Sandridge Precinct
- Wirraway Precinct
- LGA Boundary
- Major Roads
- Roads
- Rail
- Watercourse



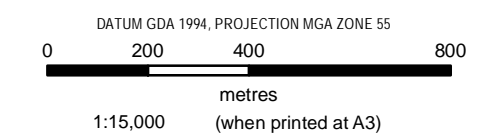
Data sources:
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GROUNDWATER WELL LOCATIONS

EPA
 Groundwater Monitoring Event (May 2016)
 Fisherman's Bend Urban Renewal Area

Figure
F2

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LEGEND

- < Groundwater Well Locations
- ! Soil samples collected
- ▭ Lorimer Precinct
- ▭ Montague Precinct
- ▭ Sandridge Precinct
- ▭ Wirraway Precinct

NEWER VOLCANICS

- Qrp** Raised beach ridges: bedded and cross bedded well sorted sand, shelly sand, minor silty or clayey sand
- Qrs** Coastal swamp deposits: fine sand, silt, silty clay often with shell beds
- Qri** Silt, silty clay, sandy clay, dark grey, minor peat and shell beds

BRIGHTON GROUP

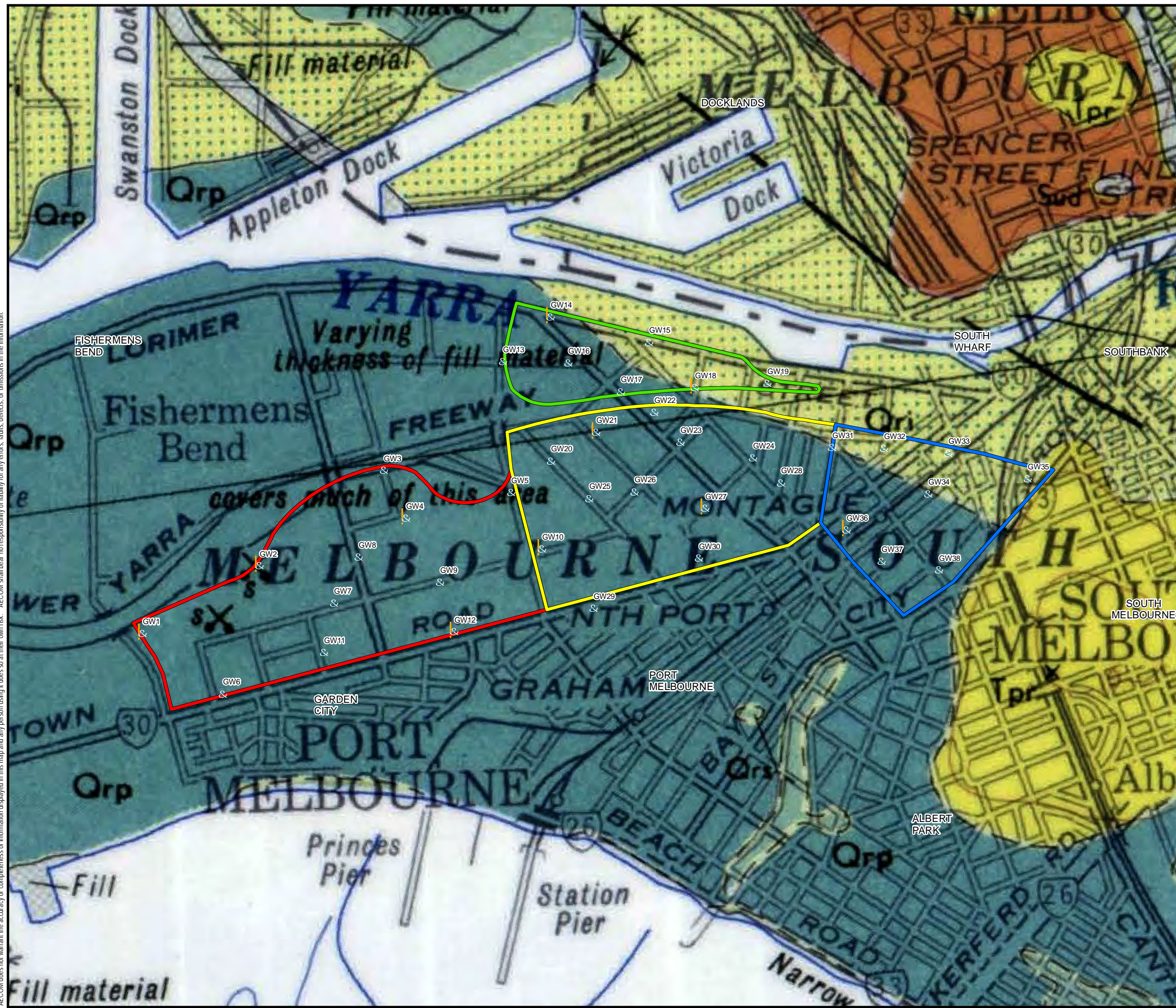
- Tpr** Sand, red-brown, yellow, and white, well bedded to cross bedded; silty sand, minor gravel, sometimes includes clay balls

Data sources:
 Base Data: (c) 20XX (data source)
 (additional data)

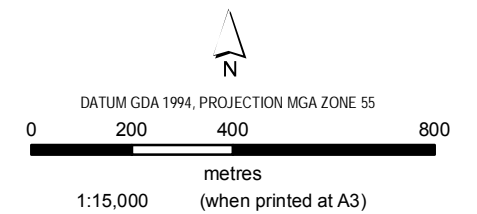
GEOLOGICAL CONDITIONS

EPA
 Groundwater Monitoring Event (May 2016)
 Fisherman's Bend Urban Renewal Area

Figure
F3



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LEGEND

- + Groundwater Well Locations
- Soil samples collected
- Groundwater Contour (mAHD)
- - - Wells marked for Tidal Assessment
- Lorimer Precinct
- Montague Precinct
- Sandridge Precinct
- Wirraway Precinct
- Inferred Historical Quarry / Landfill
- Wetlands (1788)

GW33 Sample ID
 0.16 RWL (mAHD)

Data sources:
 Base Data: (c) 2012 StreetPro
 Aerial photography service layer credits:

INFERRED GROUNDWATER FLOW DIRECTION

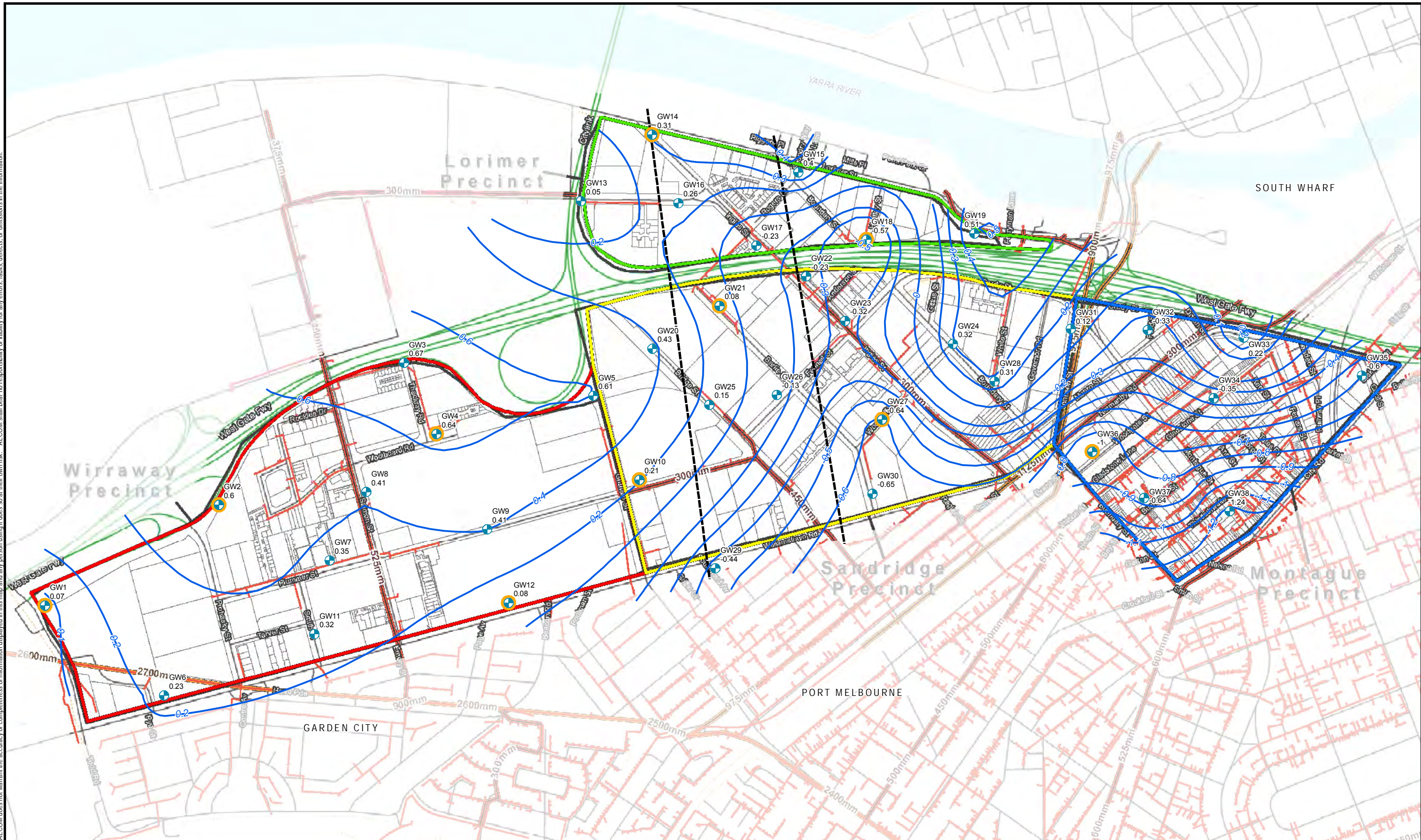
EPA
 Groundwater Monitoring Event (May 2016)
 Fisherman's Bend Urban Renewal Area

Figure
F4a

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PROJECT ID 60431087
 CREATED BY DJB
 LAST MODIFIED DJB 20 JUN 2016

AECOM
 www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE XX
 0 115 230 460
 metres
 1:10,000 (when printed at A3)

LEGEND

- + Groundwater Well Locations
- Soil samples collected
- Groundwater Contour (mAH)
- Wells marked for Tidal Assessment
- Lorimer Precinct
- Montague Precinct
- Sandridge Precinct
- Wirraway Precinct

GROUNDWATER CONTOURS AND SEWER INFRASTRUCTURE

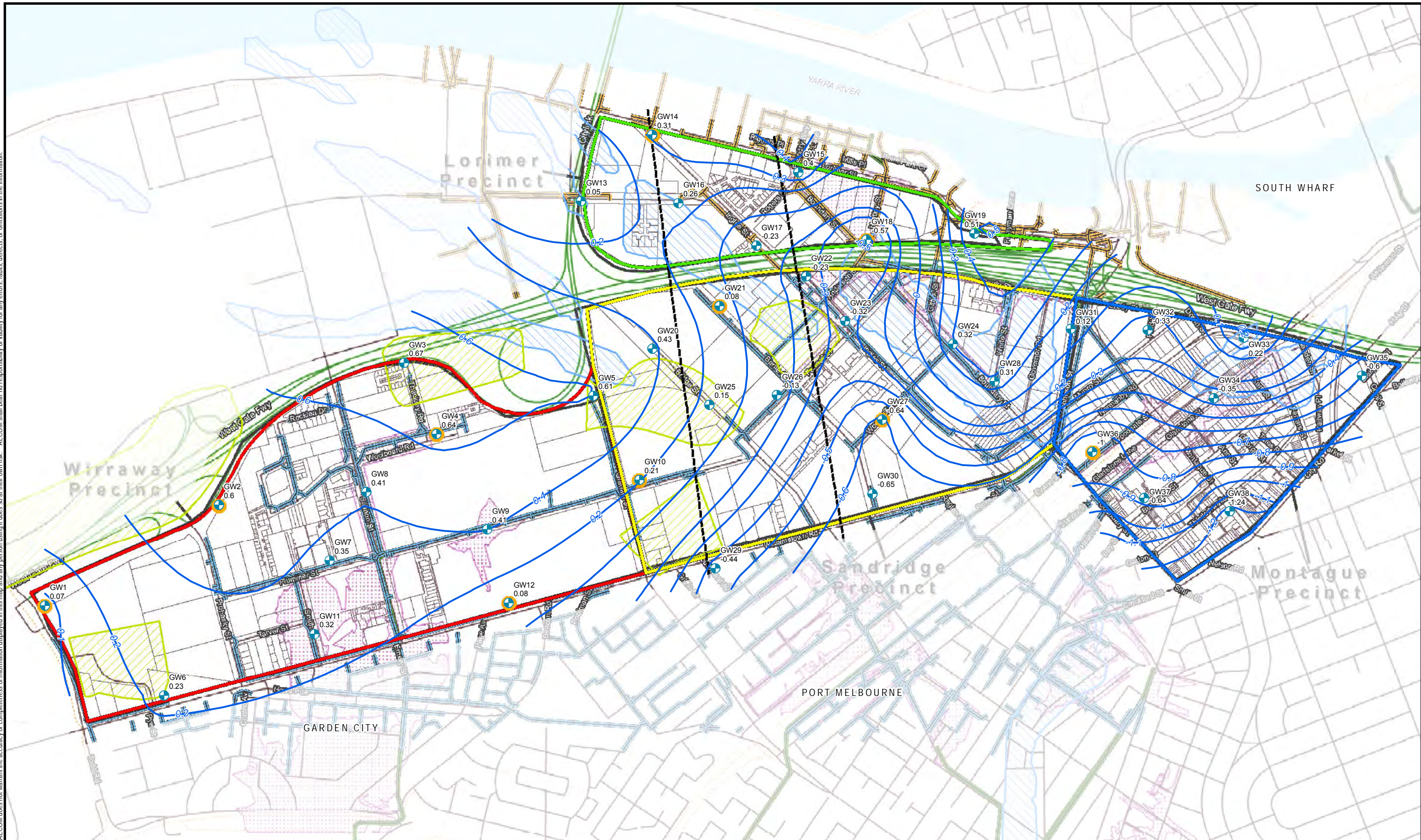
EPA

Figure
F4b

Groundwater Monitoring Event (May 2016)
 Fisherman's Bend Urban Renewal Area

Data sources: Infrastructure-Assessment-GHD_December-2012 report

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PROJECT ID 60431087
 CREATED BY DJB
 LAST MODIFIED DJB 20 JUN 2016

AECOM
 www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE XX

0 115 230 460
 metres
 1:10,000 (when printed at A3)

LEGEND

- + Groundwater Well Locations
- Groundwater Contour (mAH)
- Soil samples collected
- Wells marked for Tidal Assessment
- Lorimer Precinct
- Montague Precinct
- Sandridge Precinct
- Wirraway Precinct
- Inferred Historical Quarry / Landfill
- Wetlands (1788)

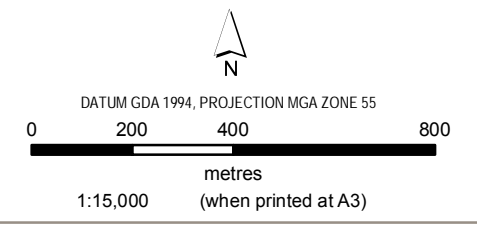
GROUNDWATER CONTOURS AND STORMWATER INFRASTRUCTURE

EPA

Figure
F4c

Data sources: Infrastructure-Assessment-GHD_December-2012 report

Groundwater Monitoring Event (May 2016)
 Fisherman's Bend Urban Renewal Area



LEGEND

- Ca-HCO3 Dominant
- Ca-Mg Dominant
- Ca-Na Dominant
- Ca-Na-HCO3 Dominant
- Ca-SO4 Dominant
- Na-Cl Dominant
- Na-HCO3 Dominant
- Wells marked for Tidal Assessment
- Lorimer Precinct
- Montague Precinct
- Sandridge Precinct
- Wirraway Precinct
- Inferred Historical Quarry / Landfill
- Wetlands (1788)
- LGA Boundary
- Major Roads
- Roads
- Rail
- Watercourse

GW33	Sample ID
1050	TDS (mg/L)

Data sources:
 Base Data: (c) 2012 StreetPro
 Aerial photography service layer credits:

GROUNDWATER CHEMISTRY

EPA
 Groundwater Monitoring Event (May 2016), Fishermans Bend Urban Renewal Area
 Fisherman's Bend, Port Melbourne, VIC

Figure
F5

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Appendix A

Groundwater Gauging Forms



Site Contamination Analysis – Water Level Data Sheet

Project Name: FBURA	Instrument Model:
Project Number: 60431087	
Recorded By: Toni Henderson	
Date: 16 May 2016	

Bore Id	Time	Depth to Water 1 st Reading (mBTOC)	Depth to Water 2 nd Reading	Stick Up	Total Depth of Well (mBTOC)	Depth to Product	Comments
GW13	09:18	2.354			3.565		
GW16	09:24	2.215			3.085		
GW05	10:00	2.444			3.125		
GW08	10:35	2.723			3.200		
GW03	10:45	3.179			4.544		
GW06	11:19	2.016			3.676		Roots
GW01	11:31	2.428			4.385		
GW25	11:42	3.017			4.914		
GW20	11:50	2.984			4.230		
GW21	11:58	2.525			3.920		
GW07	12:27	2.736			5.340		
GW04	12:34	3.189			4.720		Well head full of water, cap not sealed
GW02	12:46	3.373			3.920		
GW11	12:51	2.256			4.380		Car originally parked over well
GW12	12:56	2.773			4.100		Full of sand
GW09	01:09	2.874			5.510		No odour.
GW10	01:14	2.889			4.450		



Site Contamination Analysis – Water Level Data Sheet

Project Name: FBURA	Instrument Model:
Project Number: 60431087	
Recorded By: Zac O'Connor	
Date: 16 May 2016	

Bore Id	Time	Depth to Water 1 st Reading (mBTOC)	Depth to Water 2 nd Reading	Stick Up	Total Depth of Well (mBTOC)	Depth to Product	Comments
GW36	08:52	2.670			3.51		No odour. Well head full of water
GW34	09:06	1.444			3.99		Slight odour. Well head full of water
GW35	09:12	2.600			4.00		Slight odour
GW38	09:25	3.606			6.64		No odour
GW37	09:29	2.873			6.99		Slight odour
GW32	09:42	2.205			7.85		Moderate odour
GW33	09:51	2.295			4.12		No odour
GW31	09:59	1.369			4.03		No odour
GW28	10:04	1.308			2.30		No odour
GW24	10:15	1.353			3.41		No odour
GW22	10:20	2.252			2.75		No odour
GW23	10:25	2.218			4.16		Slight odour. Data logger in well.
GW17	10:35	2.271			2.88		No odour
GW14	10:42	2.044			3.20		No odour. Data logger in well.
GW19	10:50	1.050			5.14		Slight odour. Data logger in well.
GW15	11:01	0.821			4.46		Slight odour. Data logger and barallogger in well.
GW27	11:08	2.946			4.92		No odour
GW30	11:12	2.808			4.02		No odour

Appendix B

Groundwater Sampling Forms

FIELDWORK QUAL ' MANUAL

Bore ID: **GW1**

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

IRA	Project Number: 60431087	PM Name: Averyll Coyne	Sample Date: 17/5/16
Victoria	Project Location: Fisherman's Bend, Port Melbourne	Fieldwork Staff: Toni Henderson	Well Development or Well Sampling Event? (circle)

GENERAL BORE INFORMATION	PARAMETER INFO	DECONTAMINATION	SAMPLING METHOD	HYDRASLEEVE INFO
Bore Radius (mm): 2.424	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: 12/3	Hydrasleeve Size:
Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth:	Hydrasleeve Type:
Bore (m-pvc):	Casing Radius (mm):	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailor <input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra	Hydrasleeve Install time:
Product Thickness (m):	Bore Locked (YES/NO):		<input type="checkbox"/> Other (specify)	Sampling Start Time:
	Key Type (if applicable):	Parameter method: <input type="checkbox"/> Downhole <input type="checkbox"/> Retrieved		Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):	

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
11:57	1.0L	2.427	12/3	0.98	5.56	6.88	-86	20.3	Black, cloudy (mod turb), no odour
12:00		2.424	12/3	0.84	5.58	6.87	-100	20.4	" " " "
12:03		2.428	12/3	0.53	5.60	6.84	-155	20.8	" " " "
12:06		2.422	12/3	0.36	5.63	6.84	-198	20.9	Black, Grey, clear, " "
12:09		2.424	12/3	0.27	5.66	6.87	-208	20.9	" " " "
12:12	7.0L	2.42	12/3	0.20	5.66	6.86	-212	20.9	" " " "
sampled									
* DO DIFF. TO STABILISE.									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:	BOTTLES COLLECTED	QA/QC INFORMATION	FIELD COMMENTS												
Field Filtered:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>x 40 mL Vial (HCl)</td> <td>x 60 mL Ferrous</td> <td>1</td> <td>x 60 mL metals (HNO₃)</td> </tr> <tr> <td>2 x 40 mL Vial (H₂SO₄)</td> <td>1 x 100 mL Amber</td> <td>2</td> <td>x 250 mL Plastic</td> </tr> <tr> <td>1 60mL Purple</td> <td></td> <td></td> <td></td> </tr> </table>	x 40 mL Vial (HCl)	x 60 mL Ferrous	1	x 60 mL metals (HNO ₃)	2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2	x 250 mL Plastic	1 60mL Purple					Bore volume calculation, bore condition, fate of tubing, redox correction etc.
x 40 mL Vial (HCl)	x 60 mL Ferrous	1	x 60 mL metals (HNO ₃)												
2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2	x 250 mL Plastic												
1 60mL Purple															

Approval and Distribution			
 Fieldwork Staff Signature	17/5/16 Date	 Checker Name and Signature	22/5/16 Date
 Project Manager Signature	24/7/16 Date	Distribution: Project Central File	

FIELDWORK MANUAL

Bore ID: GW02

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	13/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO		DECONTAMINATION		SAMPLING METHOD		HYDRASLEEVE INFO	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: <u>15/5</u>		Hydrasleeve Size:		Monitoring sequence followed (number in order):	
Depth to GW (m-pvc): <u>3-375</u>	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth:		Hydrasleeve Type:			
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: <u>Y / N</u>	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):		Gauging	
Depth to Product (m-pvc): <u>N/A</u>	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:		Hydrasleeve in	
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Other (specify)		Sampling Start Time:		Hydrasleeve out	
	Key Type (if applicable):	<input type="checkbox"/> Retrieved						Parameters	
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):						

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
<u>14:10</u>	<u>1.0</u>	<u>3-375</u>	<u>15/5</u>	<u>0.90</u>	<u>3.35</u>	<u>6.77</u>	<u>-207</u>	<u>20.6</u>	<u>Grey, cloudy, no colour</u>
<u>14:13</u>		<u>3-373</u>	<u>15/5</u>	<u>0.967</u>	<u>3.37</u>	<u>6.79</u>	<u>-211</u>	<u>20.7</u>	<u>" " "</u>
<u>14:16</u>		<u>3-375</u>	<u>15/5</u>	<u>0.31</u>	<u>3.35</u>	<u>6.86</u>	<u>-211</u>	<u>20.8</u>	<u>Clear, no colour, no turb.</u>
<u>14:19</u>		<u>3-374</u>	<u>15/5</u>	<u>0.22</u>	<u>3.41</u>	<u>6.87</u>	<u>-209</u>	<u>20.8</u>	<u>" " "</u>
<u>14:21</u>		<u>3-375</u>	<u>15/5</u>	<u>0.17</u>	<u>3.44</u>	<u>6.88</u>	<u>-214</u>	<u>20.8</u>	<u>" " "</u>
<u>Sampled</u>									
<u># DO difficult to stabilise.</u>									
Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)									

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. <u>Pump set 0.10m from bottom of well</u>	
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2 x 250 mL Plastic				
		1 60mL Purple						

Approval and Distribution			
<u>[Signature]</u> Fieldwork Staff Signature	13/5/16 Date	<u>[Signature]</u> Checker Name and Signature	22-5-16 Date
<u>[Signature]</u> Project Manager Signature	24/7/16 Date	Distribution: Project Central File	

FIELDWORK QUALITY MANUAL

Bore ID: **GW3**

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	17/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD		HYDRASLEEVE INFO.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: 12/3 Intake depth:		Hydrasleeve Size:		Monitoring sequence followed (number in order):	
Depth to GW (m-pvc): 3.153	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated			Hydrasleeve Type:			
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):		Gauging	
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:		Hydrasleeve in	
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole			<input type="checkbox"/> Other (specify)	Sampling Start Time:		Hydrasleeve out	
	Key Type (if applicable):	<input type="checkbox"/> Retrieved			Parameters				
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):						

WATER QUALITY PARAMETERS										
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity	
11:15	1.0L	3.20	12/3	0.84	2003	7.17	-100	19.2	Black, opaque, high turb, no odour, no sh.	
11:18		3.207	12/3	0.96	2005	7.13	-143	20.1	" " " "	
11:21		3.203	12/3	0.31	2022	7.09	-188	20.4	Clear, black tinge, low turb, no od., no sh.	
11:24		3.209	12/3	0.23	2069	7.09	-199	20.5	" " " "	
11:27	8.0L	3.21	12/3	0.22	2098	7.11	-203	20.5	" " " "	
Sampled										
* DO DIFF. TO STABILISE										

Acceptable Parameter Range: ± 10% DO, ± 3% E.C., ± 0.05 pH, ± 10 mV Redox, ± 0.2 °C Temp, ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS			
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. <i>Pump set @ 0.5m above bottom of well</i>		
		2	x 40 mL Vial (H ₂ SO ₄)	1	x 100 mL Amber				2	x 250 mL Plastic
		1	60 mL Purge							

Approval and Distribution			
 Fieldwork Staff Signature	17/5/16 Date	 Checker Name and Signature	22.5.16 Date
 Project Manager Signature	24.7.16 Date	Distribution: Project Central File	

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FIELDWORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: **GW4**

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	17/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: 10/5		Hydrasleeve Size:	Monitoring sequence followed (number in order):		
Depth to GW (m-pvc): 3.184	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth:		Hydrasleeve Type:			
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	Gauging		
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in		
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole	<input type="checkbox"/> Other (specify)		<input type="checkbox"/> Other (specify)	Sampling Start Time:	Hydrasleeve out		
	Key Type (if applicable):	<input type="checkbox"/> Retrieved					Parameters		
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):						

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10:39	1.0	3.184	7/3	2.55	1463	6.25	60	18.7	Cloudy, light brown, high turb, no od, no smell
10:42		3.212	10/5	1.30	1399	6.25	51	19.6	light grey, " " "
10:45		3.21	10/5	1.04	1412	6.33	45	19.7	Opaque " " " "
10:48		3.203	10/5	1.10	1406	6.34	42	19.6	" " light brown " " "
10:51	4 CL	3.20	10/5	0.76	1382	6.33	42	19.6	" " " " "
				sampled					
* DO diff. to stabilize.									

Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. <i>Pump set @ 0.5m from bottom of well.</i>	
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2 x 250 mL Plastic				
		1 60mL Purple						

Approval and Distribution			
<i>[Signature]</i> Fieldwork Staff Signature	17/5/16 Date	<i>[Signature]</i> Checker Name and Signature	22-5-16 Date
<i>[Signature]</i> Project Manager Signature	24-7-16 Date	Distribution: Project Central File	

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FIELDWORK QUALITY MANUAL

Bore ID: CW5

FQM-5.05-F1 - GROUNDWATER SAMPLING AND PURGING RECORD

Project Name: FBURA **Project Number:** 60431087 **PM Name:** Averyll Coyne **Sample Date:** 17/5/16
Client: EPA - Victoria **Project Location:** Fisherman's Bend, Port Melbourne **Fieldwork Staff:** Toni Henderson **Well Development or Well Sampling Event? (circle)**

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: <u>15/5</u>		Intake depth:		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): <u>2.51</u>	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve				Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra				Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): <u>N/A</u>	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Other (specify)				Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole							
	Key Type (if applicable):	<input type="checkbox"/> Retrieved							

Calculated bore volume (L): **Includes/ excludes bore annulus (circle)** **# purge volumes removed:** **Total purged volume (L):**

WATER QUALITY PARAMETERS									Odour, Colour, Turbidity
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/l)	E.C. (mS/cm or μS/cm)	pH	Redox (mV)	Temp °C	
09:49	1.0	2.55	8/4	0.94	2466	6.26	-38	18.4	Black, opaque, high turb, no odour, no smell
09:55		2.56	9/3	0.44	2435	6.36	-57	18.9	" " " "
09:58		2.56	15/5	0.22	2416	6.40	-67	19.1	" " " "
10:01		2.564	15/5	0.10	2394	6.46	-77	19.2	" " " "
10:04	5.0L	2.57	15/5	0.02	2362	6.50	-80	19.3	" " " "
sampled									
* DO D.F.F. TO SAMPLE.									

Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. <u>Pump set @ 0.5m from bottom</u>	
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2 x 250 mL Plastic				
		1 60mL Purge						

Approval and Distribution

<u>Joy</u> Fieldwork Staff Signature Date: <u>17/5/16</u>	<u>Percy</u> Checker Name and Signature Date: <u>22-5-16</u>	<u>Percy</u> Project Manager Signature Date: <u>24-7-16</u>
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FIELDWORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID:

GW6

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson
				Sample Date:	16/5/16

GENERAL BORE INFORMATION

Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	DECONTAMINATION	SAMPLING METHOD	Well Development or Well Sampling Event? (circle)
Depth to GW (m-pvc): 2.014	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate:	Monitoring sequence followed (number in order):
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Dedicated	Intake depth:	
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailor <input type="checkbox"/> Hydrasleeve	Hydrasleeve Size:
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole <input type="checkbox"/> Retrieved	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra	Hydrasleeve Type:
Calculated bore volume (L):	Key Type (if applicable):			<input checked="" type="checkbox"/> Other (specify) low flow pump	Sampling Depth (m-pvc):
	Includes/ excludes bore annulus (circle)	# purge volumes removed:			Hydrasleeve Install time:
					Sampling Start Time:
					Parameters
				Total purged volume (L):	

WATER QUALITY PARAMETERS

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
14:42	1.0	2.019	7.8/2.2	2.90	4.06	6.67	63	18.5	Cloudy, slight orange, no odour, no sheen
14:47	1.0	2.017	7.8/2.2	1.71	4.71	6.51	72	18.3	" " " "
14:52		2.021	7.8/2.2	1.57	3.28	6.50	64	18.2	Rusty brown " " " "
14:55		2.02	7.8/2.2	1.12	4.69	6.52	54	18.2	" " " "
14:58		2.021	7.8/2.2	1.07	4.68	6.52	49	18.1	" " " "
15:01		2.02	7.8/2.2	0.66	4.63	6.53	42	18.1	" " " "
15:03		2.019	7.8/2.2	0.74	4.57	6.53	40	18.1	" " " "
15:05	7.0L	2.02	7.8/2.2	0.64	4.57	6.56	382	18.1	" " " "
			sampled						Clear, broken tinge, no odour, no sheen
		2.019							
									* DO DIFF. TO STABILISE.

Acceptable Parameter Range: ±10% DO ±3% E.C. ±0.05 pH ±10 mV Redox ±0.2 °C Temp ±10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED				QA/QC INFORMATION	FIELD COMMENTS
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. DO difficult to stabilise Pump set 0.5m from bottom of well
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2 x 250 mL Plastic			
		1 x 60mL Purple					

Approval and Distribution			
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
	16/5/16		22.5.16
Project Manager Signature	Date		
	24.7.16		

Distribution: Project Central File

FIELDWORK QUALITY MANUAL

Bore ID: CW7

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	17/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: <u>12/3</u>		Hydrasleeve Size:		Monitoring sequence followed (number in order):	
Depth to GW (m-pvc): <u>2.743</u>	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth:		Hydrasleeve Type:			
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):		Gauging	
Depth to Product (m-pvc): <u>N/A</u>	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:		Hydrasleeve in	
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Other (specify)		Sampling Start Time:		Hydrasleeve out	
	Key Type (if applicable):	<input type="checkbox"/> Retrieved						Parameters	
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):						

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
07:38	1.0	2.744	10/5	1.20	2356	6.96	-20	17.8	Grey, low turb., no odour, no sheen.
07:41	2.74	2.748	12.5/2.5	0.68	2323	6.98	-50	18.7	Grey, high turb., cloudy, no od., no sheen.
07:44		2.745	12/3	0.41	2302	6.97	-67	19.0	" " " " " "
07:47		2.748	12/3	0.25	2284	6.96	-85	19.2	Grey, low turb., no od., no sheen.
07:50		2.744	12/3	0.17	2289	6.98	-99	19.3	" " " " " "
07:53	5.0L	2.745	12/3	0.14	2290	7.00	-105	19.3	" " " " " "
sampled									
* DO diff. to stabilise.									

Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED		QA/QC INFORMATION	FIELD COMMENTS
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1 x 60 mL metals (HNO ₃)	Bore volume calculation, bore condition, fate of tubing, redox correction etc. <u>Pump set @ 0.5m from bottom of well.</u>
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2 x 250 mL Plastic	
		1 60mL Purple			

Approval and Distribution			
 Fieldwork Staff Signature	<u>17/5/16</u> Date	 Checker Name and Signature	<u>22-5-16</u> Date
 Project Manager Signature	<u>24-7-16</u> Date	Distribution: Project Central File	

FIELDWORK QUALITY MANUAL

Bore ID: **GW8**

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	17/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: 7/3		Intake depth:		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 2.746	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated					Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):		Hydrasleeve Install time:	Gauging
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:		Sampling Start Time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole			<input type="checkbox"/> Other (specify)				Hydrasleeve out
	Key Type (if applicable):	<input type="checkbox"/> Retrieved							Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:			Total purged volume (L):				

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
08:28		2.740	7/3	0.98	1436	6.85	-1	17.8	High turb, grey-brown, no odour, no sheen.
08:31		2.741	7/3	0.51	1407	6.80	-8	18.3	Cloudy " " " "
08:34		2.75	7/3	0.36	1400	6.78	-14	18.4	" " " "
08:37		2.742	7/3	0.24	1394	6.85	-23	18.5	" " " "
08:40	5.0L	2.740	7/3	0.22	1396	6.87	-27	18.6	" " " "
sampled									
*DO D.F. TO STABILISE.									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. <i>Well head full of water, some sheen. Pump set @ 0.5m from bottom of the well.</i>	
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2 x 250 mL Plastic				
		1 60mL Purple						

Approval and Distribution			
	17/5/16		22.5.16
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
	24.7.16	Distribution: Project Central File	
Project Manager Signature	Date		

FIELDWORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: **GW9**

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	17/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: 12/3		Intake depth:		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 2.85	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	<input type="checkbox"/> Bailer		<input type="checkbox"/> Hydrasleeve		Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Peristaltic Pump		<input type="checkbox"/> Waterra		Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Other (specify)		<input type="checkbox"/> Other (specify)		Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole							
	Key Type (if applicable):	<input type="checkbox"/> Retrieved							
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):						

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
15:21	1.0L	2.882	10/5	2.10	1865	7.10	-170	18.5	Grey, cloudy, mod. turb. no odour
15:24		2.889	12/3	0.46	1779	7.12	-191	19.0	" clear, low turb "
15:27		2.886	12/3	0.35	1760	7.12	-192	19.1	" " "
15:30		2.887	12/3	0.22	1745	7.13	-193	19.1	" " "
15:33		2.887	12/3	0.19	1732	7.13	-197	19.1	" " "
sampled									
* DO OFF. TO STABILISE.									

Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)	QCBI - duplicate		Bore volume calculation, bore condition, fate of tubing, redox correction etc. Pump set @ 0.5m from bottom of well.
		2 x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	2 x 250 mL Plastic			
		1 becal Purple					

Approval and Distribution			
Fieldwork Staff Signature 	Date 17/5/16	Checker Name and Signature 	Date 22.5.16
Project Manager Signature 	Date 24.7.16	Distribution: Project Central File	

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FIELDWORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: **GW10**

Project Name: FBURA	Project Number: 60431087	PM Name: Averyll Coyne	Sample Date: 19/5/16
Client: EPA - Victoria	Project Location: Fisherman's Bend, Port Melbourne	Fieldwork Staff: Toni Henderson	

GENERAL BORE INFORMATION		PARAMETER INFO		DECONTAMINATION		SAMPLING METHOD		Well Development or Well Sampling Event? (circle)	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: 12/3		Intake depth:		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 2.899	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra		Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Other (specify)		<input type="checkbox"/> Other (specify)		Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	Parameter method: <input type="checkbox"/> Downhole <input type="checkbox"/> Retrieved					Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):							Sampling Start Time:	Hydrasleeve out
Calculated bore volume (L):	Key Type (if applicable):								Parameters
	Includes/ excludes bore annulus (circle)	# purge volumes removed:			Total purged volume (L):				

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
07:36	1.0L	2.908	10/5	1.72	838	6.62	9	16.6	Brown, cloudy, mild turb., no odour, no shear.
07:39		2.904	12/3	0.62	807	6.21	33	17.9	Grey " " " "
07:42		2.905	12/3	0.32	799	6.17	33	18.3	" " " "
07:45		2.906	12/3	0.22	792	6.17	30	18.3	" " " "
07:48		2.905	12/3	0.17	789	6.18	30 26	18.3	Clear, grey tinge, no turb., no rd., no shear
* DO OFF. TO STABILISE.									

Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED				QA/QC INFORMATION	FIELD COMMENTS
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. Pump set @ 0.5m from bottom of well.
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2 x 250 mL Plastic			
		1 60mL Purple					

Approval and Distribution			
Fieldwork Staff Signature: <i>[Signature]</i>	Date: 18/5/16	Checker Name and Signature: <i>[Signature]</i>	Date: 22.5.16
Project Manager Signature: <i>[Signature]</i>	Date: 24.7.16	Distribution: Project Central File	

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FIELDWORK QUALITY MANUAL

Bore ID:

GW11

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	16/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO		DECONTAMINATION	SAMPLING METHOD		HYDRASLEEVE INFO	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:		<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: 12/3 Intake depth:	Hydrasleeve Size:	Monitoring sequence followed (number in order):	
Depth to GW (m-pvc): 2.26	Screen Interval (m):	Chem Kit Model:		<input type="checkbox"/> Dedicated		Hydrasleeve Type:		
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N		<input type="checkbox"/> Disposable	<input type="checkbox"/> Baier	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)		<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method:	<input type="checkbox"/> Downhole		<input checked="" type="checkbox"/> Other (specify) Low Flow pump		Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):		<input type="checkbox"/> Retrieved					Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):				




WATER QUALITY PARAMETERS

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
16:32		2.27	10/5	1.54	812	5.70	-202	18.3	Grey low turb, no odour, no sheen
16:35		2.26	12/3	0.39	809	5.32	-219	18.5	" " " "
16:38		2.274	12/3	0.54	800	6.01	-227	18.7	" mod. turb, no odour, no sheen.
16:42		2.269	12/3	0.23	758	6.21	-225	18.7	" " " "
16:45		2.271	12/3	0.20	749	6.31	-224	18.7	Clear, grey, low turb, no odour, no sheen
16:48		2.268	12/3	0.18	746	6.33	-223	18.7	" " " "
16:50		2.269	12/3	0.16	743	6.38	-220	18.7	" " " "
16:50				sampled					
									* DO DIFF. TO STABILISE.

Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION	FIELD COMMENTS
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1 x 60 mL metals (HNO ₃)		Bore volume calculation, bore condition, fate of tubing, redox correction etc. Pump set @ 0.5m from bottom of well
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2 x 250 mL Plastic		
		1 60mL purple				

Approval and Distribution

 Fieldwork Staff Signature	16/5/16 Date	 Checker Name and Signature	22-5-16 Date
 Project Manager Signature	24-7-16 Date	Distribution: Project Central File	

FIELDWORK QUALITY MANUAL

Bore ID: GW12

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	16/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION	SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate:		Hydrasleeve Size:	Monitoring sequence followed (number in order):	
Depth to GW (m-pvc): <u>2.77</u>	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth:		Hydrasleeve Type:		
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: <u>Y / N</u>	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailor	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	Gauging	
Depth to Product (m-pvc): <u>N/A</u>	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in	
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole	<input checked="" type="checkbox"/> Other (specify)		<u>Low flow pump</u>	Sampling Start Time:	Hydrasleeve out	
	Key Type (if applicable):	<input type="checkbox"/> Retrieved					Parameters	
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:			Total purged volume (L):			

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
15:38		2.780	10/5	3.10	1827	6.34	88	17.8	Cloudy, dark grey, no odour, no sheen
15:42		2.772	10/5	1.83	1775	6.03	95	18.1	" " " "
15:46		2.773	10/5	0.80	1729	5.94	99	18.3	Clear, grey, no od, no sheen
15:50		2.781	13/2	0.73	1707	5.97	86	18.4	Clear, no rust, no od, no sheen
15:54		2.780	13/2	0.69	1698	6.02	72	18.4	" " " "
16:00	50L	2.775	13/2	0.59	1697	6.04	68	18.4	" " " "
<u>sampled</u>									
		2.771							* DO OFF TO STABILISE.
Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)									

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION	FIELD COMMENTS
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1 x 60 mL metals (HNO ₃)		Bore volume calculation, bore condition, fate of tubing, redox correction etc. <u>Overcast, windy</u>
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2 x 250 mL Plastic		
		1 60 mL Purple				

Approval and Distribution			
	16/5/16		22-5-16
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
	24-7-16		
Project Manager Signature	Date	Distribution: Project Central File	

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FIELDWORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: **G-W13**

Project Name: FBURA	Project Number: 60431087	PM Name: Averyll Coyne	Sample Date: 18/5/16
Client: EPA - Victoria	Project Location: Fisherman's Bend, Port Melbourne	Fieldwork Staff: Toni Henderson	

GENERAL BORE INFORMATION		PARAMETER INFO		DECONTAMINATION		SAMPLING METHOD		HYDRASLEEVE INFO	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):			
Depth to GW (m-pvc): 2-366	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth:	Hydrasleeve Type:				
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailor	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	Gauging		
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in		
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method:	<input type="checkbox"/> Downhole	<input type="checkbox"/> Other (specify)		Sampling Start Time:	Hydrasleeve out		
	Key Type (if applicable):	<input type="checkbox"/> Retrieved					Parameters		
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):						

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or -mg/l)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
09:25	1.06	2.382	15/5	5.40	619	7.38	1	17.2	
09:28	2.384	2.386	15/5	3.74	870	7.15	-10	17.7	Brown low turb, no od, no shear
09:31		2.386	15/5	2.70	870	7.05	-19	18.1	Brown, cloudy
09:33		2.385	15/5	2.18	649	7.02	-27	18.2	" " " "
09:36		2.389	15/5	1.79	646	7.04	-42	18.2	" " getting clearer
09:39		2.389	15/5	1.52	665	7.05	-62	18.4	Clear, no turb, brown haze, no od.
09:42		2.389	15/5	1.30	726	7.06	-70	18.4	" " " "
09:45		2.391	15/5	1.29	757	7.06	-78	18.4	" " " "
09:48		2.39	15/5	1.17	744	7.05	-82	18.4	" " " "
Sampled									
* DO Diff. TO STABILISE									

Acceptable Parameter Range: ± 10% DO, ± 3% E.C., ± 0.05 pH, ± 10 mV Redox, ± 0.2 °C Temp, ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. Pump set 0.3m from bottom of well.	
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2 x 250 mL Plastic				
		1 Lowal Purple						

Approval and Distribution			
Fieldwork Staff Signature: <i>[Signature]</i>	Date: 18/5/16	Checker Name and Signature: <i>[Signature]</i>	Date: 22.5.16
Project Manager Signature: <i>[Signature]</i>	Date: 24.7.16	Distribution: Project Central File	

FIELD WORK QUALITY MANUAL

FQM-5.05-F1 - GROUNDWATER SAMPLING AND PURGING RECORD

Project Name: FBURA		Project Number: 60431087		PM Name: Averyll Coyne		Bore ID: GW14
Client: EPA - Victoria		Project Location: Fisherman's Bend, Port Melbourne		Fieldwork Staff: Zac O'Connor		
GENERAL BORE INFORMATION						
Date of GW Level:	Bore Radius (mm): 100	Screen Interval (m):	Chem Kit Serial No.:	DECONTAMINATION		Sample Date: 17/05/16
Depth to GW (m-pvc): 2.062	Casing Radius (mm): 50	Cover Type (gatic/stick up):	Chem Kit Model:	<input checked="" type="checkbox"/> Decontaminated	SAMPLING METHOD	
Bore Depth (m-pvc):	Bore Locked (YES/NO):	Key Type (if applicable):	Corrected Redox: Y / N	<input type="checkbox"/> Dedicated	Well Development or Well Sampling Event? (circle)	
Depth to Product (m-pvc):	Includes/ excludes bore annulus (circle)		(The correction to apply is probe dependent)	<input type="checkbox"/> Disposable	Monitoring sequence followed (number in order):	
Product Thickness (m):			Parameter method: <input type="checkbox"/> Downhole <input type="checkbox"/> Retrieved	<input type="checkbox"/> Other (specify)	Gauging	
Calculated bore volume (L):			# purge volumes removed:		Hydrasleeve in	

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	WATER QUALITY PARAMETERS						Odour, Colour, Turbidity
				DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C		
14 05	1.0	2.115	17/3	7.23	238	6.75	-62	19.7	Light brown, low turbidity, no odour.	
14 08	2.0	2.165	17/3	6.33	225	6.65	-47	19.7		
14 11	3.0	2.169	18/2	6.52	219	6.64	-44	19.8		
14 14	3.5	2.170	19/4	6.26	219	6.65	-42	19.7		
14 17	4.0	2.161		5.72	218	6.63	-38	19.5		
14 20	4.5	2.159		5.75	220	6.63	-37	19.5		
14 23	5.0	2.158		5.72	220	6.64	-37	19.5		

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED				QA/QC INFORMATION	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)	± 10% turbidity (if using a turbidity meter)		
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic	FIELD COMMENTS		
		Approval and Distribution				Bore volume calculation, bore condition, fate of tubing, redox correction etc.	

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
<i>[Signature]</i>	24-7-16	<i>[Signature]</i>	22-5-16
Project Manager Signature	Date	Distribution: Project Central File	

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FIELDWORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: **GW15**


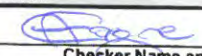
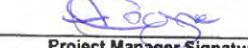
Project Name: FBURA	Project Number: 60431087	PM Name: Averyll Coyne	Sample Date: 18/5/16
Client: EPA - Victoria	Project Location: Fisherman's Bend, Port Melbourne	Fieldwork Staff: Toni Henderson	

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate:		Intake depth:		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 0.64	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Bailer <input type="checkbox"/> Hydrasleeve		Peristaltic Pump <input type="checkbox"/> Waterra		Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	Other (specify):		Other (specify):		Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify):					Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole					Sampling Start Time:		Hydrasleeve out
	Key Type (if applicable):	<input type="checkbox"/> Retrieved							Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:			Total purged volume (L):				

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
08:29	1.0L	1.16	25/5	3.06	31.2	6.79	-305	18.9	Yellow, clear, no odour , no sheen, H ₂ S odour
09:32		1.35	28/2	1.46	32.9	6.81	-316	19.1	Yellow-green, clear, H ₂ S odour, no sheen
10:35		1.48	51/9	0.88	33.5	6.83	-322	19.2	" " " "
10:38		1.57	81/9	0.65	33.7	6.84	-326	19.2	" " " "
10:41		1.60	90/30	0.48	34.0	6.85	-327	19.2	" " " "
10:44		1.68	90/30	0.34	34.1	6.85	-332	19.2	" " " "
10:47		1.76	90/30	0.21	34.3	6.86	-335	19.2	" " " " Grey tinge -
Paused, left to recharge before continuing				✓	✓	✓	✓	✓	
* DO diff. TO STABILISE.									

Acceptable Parameter Range: ± 10% DO, ± 3% E.C., ± 0.05 pH, ± 10 mV Redox, ± 0.2 °C Temp, ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. 10:20 Data logger removed. Pump set at 0.5m above bottom of well. well depth: 4.5m Logger returned @ 11:16am	
		2 x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic				
		1 60mL Purple						

Approval and Distribution			
 Fieldwork Staff Signature	18/5/16 Date	 Checker Name and Signature	22-5-16 Date
 Project Manager Signature	24-7-16 Date	Distribution: Project Central File	

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FIELD WORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: GW17

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	17/05/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Zac O'Connor	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	17/5/16	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate:		Hydrasleeve Size:	Monitoring sequence followed (number in order):	
Depth to GW (m-pvc):	2.282	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth:		Hydrasleeve Type:		
Bore Depth (m-pvc):		Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	Gauging	
Depth to Product (m-pvc):		Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in	
Product Thickness (m):		Bore Locked (YES/NO):	Parameter method:	<input type="checkbox"/> Downhole	<input type="checkbox"/> Other (specify)		Sampling Start Time:	Hydrasleeve out	
		Key Type (if applicable):		<input type="checkbox"/> Retrieved				Parameters	
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):			

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
14:53	0.8	2.320	18/2	2.54	1332	6.63	-147	19.1	Yellow-brown, mod. turbidity, no odour
14:56	1.6	2.319		0.71	1327	6.55	-172	19.6	
14:59	2.4	2.324		0.45	1333	6.56	-186	19.7	
15:02	3.2	2.327		0.25	1339	6.53	-194	19.7	
15:05	4.0	2.328		0.16	1340	6.52	-200	19.8	
15:08	4.8	2.330		0.14	1339	6.52	-203	19.8	
15:11	5.6	2.331		0.12	1337	6.52	-204	19.8	
15:14	6.4	2.330		0.12	1338	6.52	-206	19.8	

Acceptable Parameter Range: ± 10% DO, ± 3% E.C., ± 0.05 pH, ± 10 mV Redox, ± 0.2 °C Temp, ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. <i>Commence purging at 14:50</i>	
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic				

Approval and Distribution

Fieldwork Staff Signature	Date	<i>Aoyce</i>	22.5.16	Checker Name and Signature	Date
<i>Aoyce</i>	24.7.16				
Project Manager Signature		Date		Distribution: Project Central File	

FIELDWORK QUALITY ANNUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND LOGGING RECORD

Bore ID: GW19

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	18/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION	SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	Corrected Redox: Y / N <small>(The correction to apply is probe dependent)</small>	<input type="checkbox"/> Decontaminated <input type="checkbox"/> Dedicated	Low Flow: Pump rate:		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): <u>1-035</u>	Screen Interval (m):	Chem Kit Model:			Intake depth:		Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Parameter method:	<input type="checkbox"/> Downhole <input type="checkbox"/> Retrieved	<input type="checkbox"/> Disposable <input type="checkbox"/> Other (specify)	<input type="checkbox"/> Bailer	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): <u>NA</u>	Cover Type (gatic/stick up):				<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):				<input type="checkbox"/> Other (specify)		Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):							Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):
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WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or μ S/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
11:40	1.0L	1.040	50/10	1.54	26.41	6.57	-282	18.1	Black, cloudy, H ₂ S odour.
11:43		1.16	50/10	0.89	29.2	6.52	-315	18.2	" " "
11:48		1.40	70/20	0.34	20.2	6.48	-319	18.6	" " getting clearer.
Purged to 50% of water column, left to recharge.									
									Slight sheen to water, green fringe.

Acceptable Parameter Range:	$\pm 10\%$	$\pm 3\%$	± 0.05	± 10 mV	± 0.2 °C	$\pm 10\%$ turbidity (if using a turbidity meter)
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ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION	FIELD COMMENTS
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic		

Approval and Distribution			
<u>[Signature]</u> Fieldwork Staff Signature	18/5/16 Date	<u>[Signature]</u> Checker Name and Signature	22-5-16 Date
<u>[Signature]</u> Project Manager Signature	24-7-16 Date	Distribution: Project Central File	

Data logger removed 11:31
Total depth: 5-13, black silt on probe
Pump set at 0.5m
Data logger returned @ 12:01 pm

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FIELDWORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: **GW20**

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	17/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: 17/3 Intake depth:		Hydrasleeve Size:		Monitoring sequence followed (number in order): Gauging Hydrasleeve in Hydrasleeve out Parameters	
Depth to GW (m-pvc): 2.984	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated			<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve <input type="checkbox"/> Penstaltic Pump <input type="checkbox"/> Waterra <input type="checkbox"/> Other (specify)			
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	(The correction to apply is probe dependent) Parameter method: <input type="checkbox"/> Downhole <input type="checkbox"/> Retrieved		Sampling Depth (m-pvc):			
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):		<input type="checkbox"/> Other (specify)			<input type="checkbox"/> Other (specify)			
Product Thickness (m):	Bore Locked (YES/NO):					Sampling Start Time:			
	Key Type (if applicable):								
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:			Total purged volume (L):				

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
12:52	1.0L	2.99	15/5	1.79	2.63	7.25	-93	19.5	Grey, cloudy, low turb., no odour, no smell
12:55		3.005	15/5	0.66	2.55	7.22	-92	20.5	"
12:58		3.006	17/3	0.45	2.53	7.20	-94	20.4	Clear, grey, no turb., no odour, no sh.
13:01		3.008	17/3	0.17	2.53	7.21	-107	20.5	"
13:03		3.008	17/3	0.11	2.53	7.22	-110	20.5	"
13:06		3.01	17/3	0.07	2.54	7.22	-111	20.5	"
sampled									
* DO. DIFF. TO STABILISE.									

Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. Pump set @ 0.5m from bottom of well.	
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic				

Approval and Distribution			
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
	24.7.16		22.5.16
Project Manager Signature	Date	Distribution: Project Central File	

FIELDWORK QUALITY MANUAL

FQM-5.05-F1 - GROUNDWATER SAMPLING AND PURGING RECORD

Project Name:	FBURA	Project Number:	80431087	PM Name:	Averyll Coyne	Bore ID:	GW21
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	Sample Date:	

GENERAL BORE INFORMATION		PARAMETER INFO		DECONTAMINATION		SAMPLING METHOD		Well Development or Well Sampling Event? (circle)	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: 8/2		Intake depth:		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 2.53	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Bailer <input type="checkbox"/> Hydrasleeve		Hydrasleeve Type:		Gauging	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra		Hydrasleeve Install time:		Hydrasleeve in	
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Other (specify)		Sampling Start Time:		Hydrasleeve out	
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method:	<input type="checkbox"/> Downhole					Parameters	
	Key Type (if applicable):	<input type="checkbox"/> Retrieved							
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):				

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	WATER QUALITY PARAMETERS					Odour, Colour, Turbidity	
				DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C		
14:29	1.0	2.545	8/2	2.56	1210	5.65	47	19.1		
14:32		2.545	8/2	1.87	1193	5.75	35	19.4	Grey opaque, low turb, no od, no shk.	
14:35		2.544	8/2	1.74	1201	5.84	24	19.5	" " " "	
14:38		2.545	8/2	1.75	1184	5.88	8	19.5	" " " "	
14:41		2.55	8/2	1.68	1197	5.95	8-41	19.6	" " " "	
14:44		2.54	8/2	1.54	1197	5.98	-51	19.6	" " " "	
14:47	8.0 L	2.545	8/2	1.49	1198	5.99	-59	19.6	Very grey, low turb, no od, no shk.	
sampled										
* DO DIFF. TO STABILISE.										

Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.	
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic				

Approval and Distribution			
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
	17/5/16		22.5.16
Project Manager Signature	Date	Distribution: Project Central File	
	24.7.16		

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FIELD WORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: QW22

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	18/05/2016
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Zac O'Connor	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION	SAMPLING METHOD:		HYDRASLEEVE INFO:		
Date of GW Level:	<u>18/05/16</u>	Bore Radius (mm):	<u>100</u>	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate:	<u>CPM 2</u>	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	<u>2.266</u>	Screen Interval (m):		Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth:	<u>2.75</u>	Hydrasleeve Type:	
Bore Depth (m-pvc):	<u>3.75</u>	Casing Radius (mm):	<u>50</u>	Corrected Redox:	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	<u>2.75</u>
Depth to Product (m-pvc):		Cover Type (gatic/stick up):		(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify) ~	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method:	<input type="checkbox"/> Downhole	<input type="checkbox"/> Other (specify)		Sampling Start Time:	Hydrasleeve out
		Key Type (if applicable):			<input type="checkbox"/> Retrieved				Parameters
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):			

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1629	1.0	2.270	27/3	2.72	623	5.97	-88	18.9	<i>Grey/brown, mod turbidity, no colour</i>
1632	2.0	2.268		1.26	452	5.30	-46	19.2	
1635	3.0	2.267	↓	0.67	489	5.10	-15	19.3	
1638	4.5	2.262	12/3	0.35	860	5.42	-5	19.7	
1641	6.0	2.271		0.15	1097	5.59	-12	19.8	
1644	7.5	2.256	↓	0.09	1128	5.61	-14	19.8	
1647	9.0	2.252		0.06	1149	5.64	-12	19.7	
1650			↓	0.08	1159	5.62	-15	19.6	

Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION	FIELD COMMENTS
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)		Bore volume calculation, bore condition, fate of tubing, redox correction etc. <i>Commence purging at 1626</i> <i>Rate 7 to CPM at 1635.</i>
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic		

Approval and Distribution			
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
<i>[Signature]</i>	<u>24-7-16</u>	<i>[Signature]</i>	<u>22-5-16</u>
Project Manager Signature	Date	Distribution: Project Central File	

FIELDWORK QUAL

MANUAL

Bore ID:

GW23

FQM-5.05-F1 - GROUNDWATER SAMPLING AND PURGING RECORD

Project Name: FBURA	Project Number: 60431087	PM Name: Aveyll Coyne	Sample Date: 18/5/16
Client: EPA - Victoria	Project Location: Fisherman's Bend, Port Melbourne	Fieldwork Staff: Toni Henderson	Well Development or Well Sampling Event? (circle)

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: 50/10	Hydrasleeve Size:	Intake depth:		Monitoring sequence followed (number in order):	
Depth to GW (m-pvc): 2-225	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	<input type="checkbox"/> Baier	Hydrasleeve Type:			Gauging	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Peristaltic Pump	Hydrasleeve Install time:			Hydrasleeve in	
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Waterra	Sampling Start Time:			Hydrasleeve out	
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole			Other (specify)			Parameters	
	Key Type (if applicable):	<input type="checkbox"/> Retrieved							
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:			Total purged volume (L):				

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
12:35	1.0	2-223	50/10	2.73	2.81	6.34	-115	19.6	Grey, cloudy, mod. turb. organic odour
12:38		2-222	50/10	2.04	2.73	6.24	-117	19.9	" " " "
12:41		2-224	50/10	1.68	2.72	6.21	-118	20.0	Grey, clear, low turb., no odour.
12:44		2-224	50/10	1.18	2.75	6.19	-122	20.1	" " " "
12:47		2-223	50/10	1.03	2.76	6.20	-122	20.2	" " no turb, no odour.
12:50		2-223	50/10	0.69	2.90	6.25	-126	20.1	" " " "
12:53		2-222	50/10	0.58	2.95	6.26	-125	20.1	Clear, no turb, no odour
12:56		2-222	50/10	0.56	2.98	6.26	-126	20.1	" " " "
				sampled					" " " "
									* DO DIFF. TO STABILISE.

Acceptable Parameter Range:

± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1 x 60 mL metals (HNO ₃)	
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2 x 250 mL Plastic	
		2 Purple 60ml			

FIELD COMMENTS
Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Data logger removed 12:25 pm
Pump set 0.5m from bottom of well.

Approval and Distribution

Fieldwork Staff Signature: _____ Date: _____

Project Manager Signature: _____ Date: 24-7-16

Checker Name and Signature: A Coyne Date: 22-5-16

Distribution: Project Central File

FIELD WORK QUALITY MANUAL

Bore ID:

GW25

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Project Name: FBURA		Project Number: 60431087		PM Name: Averyll Coyne		Sample Date: 16/05/16			
Client: EPA - Victoria		Project Location: Fisherman's Bend, Port Melbourne		Fieldwork Staff: Zac O'Connor		Well Development or Well Sampling Event? (circle)			
GENERAL BORE INFORMATION			PARAMETER INFO.		DECONTAMINATION	SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level: 16/05/16	Bore Radius (mm): 100	Chem Kit Serial No.:	<input checked="" type="checkbox"/> Decontaminated		Low Flow: Pump rate: 11/4		Hydrasleeve Size:		Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 3.018	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated		Intake depth: 3.80		Hydrasleeve Type:		
Bore Depth (m-pvc):	Casing Radius (mm): 50	Corrected Redox: Y / N	<input type="checkbox"/> Disposable		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve		Sampling Depth (m-pvc): 3.8		Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up): Gatic	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra		Hydrasleeve Install time:		Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole	<input type="checkbox"/> Other (specify) Micropurge		<input type="checkbox"/> Other (specify)		Sampling Start Time: 1541		Hydrasleeve out
	Key Type (if applicable):	<input type="checkbox"/> Retrieved							Parameters
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):			
WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1544	1.0	3.025	11/4	2.36	2810	6.98	-16	20.4	Grey/brown, low-med. turbidity, no odour.
1547	2.0	3.029		1.28	2780	7.02	-35	20.8	
1550	3.0	3.030		0.78	2820	7.04	-49	20.9	Grey, low turbidity, no odour.
1553	4.0	3.032		0.52	2830	7.05	-58	20.9	As above, light grey.
1556	5.0	3.035		0.40	2820	7.05	-64	20.9	
1559	6.0	3.032		0.39	2810	7.05	-65	20.9	
16.02	7.0	3.033		0.37	2820	7.05	-66	20.9	
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)
ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS		
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic					
Approval and Distribution									
Fieldwork Staff Signature		Date	Checker Name and Signature		Date				
Project Manager Signature		Date	Distribution: Project Central File						

FIELD WORK QUALITY MANUAL

FQM-5.05-F1 - GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: GW26

Name: FBURA Project Number: 60431087 PM Name: Averyll Coyne
 Client: EPA - Victoria Project Location: Fisherman's Bend, Port Melbourne Fieldwork Staff: Zac O'Connor Sample Date: 16/05/16

GENERAL BORE INFORMATION		PARAMETER INFO		DECONTAMINATION		SAMPLING METHOD		Well Development or Well Sampling Event? (circle)	
Date of GW Level: <u>16/05/16</u>	Bore Radius (mm): <u>80 100</u>	Chem Kit Serial No.:	<input checked="" type="checkbox"/> Decontaminated	Low Flow: Pump rate: <u>12/3</u>		Intake depth: <u>3.0</u>		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): <u>2.5 574</u>	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	<input type="checkbox"/> Bailer	<input type="checkbox"/> Hydrasleeve	Hydrasleeve Type:		Gauging	
Bore Depth (m-pvc):	Casing Radius (mm): <u>5.0</u>	Corrected Redox: <u>Y / N</u>	<input type="checkbox"/> Disposable	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:		Hydrasleeve in	
Depth to Product (m-pvc):	Cover Type (gatic/stick up): <u>Gatic</u>	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Other (specify) <u>Microperge</u>	Sampling Start Time: <u>14:54</u>		Hydrasleeve out		
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole	Total purged volume (L):		Parameters				
Calculated bore volume (L):	Key Type (if applicable):	<input type="checkbox"/> Retrieved							
Includes/ excludes bore annulus (circle)		# purge volumes removed:							

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or μ S/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1454	0.5	2.570	12/3	2.96	1419	5.67	136	19.3	Brown, very turbid, no odour, no green.
1457	1.0	2.609		1.82	1484	5.80	126	19.4	
1500	1.5	2.606		1.57	1574	5.99	132	19.4	
1503	2.0	2.612		1.41	1574	6.05	129	19.3	Light brown, low turbidity, no odour.
1506	2.5	2.608		1.10	1579	6.10	122	19.3	
1509	4.5	2.618	11/4	0.95	1581	6.11	119	19.4	
1512	5.5	2.620	11/4	0.72	1586	6.12	115	19.3	
1515	6.5	2.625	11/4	0.69	1596	6.12	114	19.3	
1518	7.5	2.626	11/4	0.68	1595	6.12	114	19.3	

Acceptable Parameter Range: $\pm 10\%$ $\pm 3\%$ ± 0.05 ± 10 mV ± 0.2 °C $\pm 10\%$ turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED				QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered: <u>metals</u>	Unfiltered:	2 x 40 mL Vial (HCl)	1 x 60 mL Ferrous	1 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
		1 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 250 mL Plastic					
		1 60mL Nitrate							

Approval and Distribution

Fieldwork Staff Signature <u>[Signature]</u>	Date <u>22.5.16</u>	Checker Name and Signature <u>[Signature]</u>	Date <u>22.5.16</u>
Project Manager Signature <u>[Signature]</u>	Date <u>24.7.16</u>	Distribution: Project Central File	

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FIELDWORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: **GW27**

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	18/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	Well Development or Well Sampling Event? (circle)	

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: Intake depth:		Hydrasleeve Size: Hydrasleeve Type:		Monitoring sequence followed (number in order):	
Depth to GW (m-pvc): 2.77	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated						
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer		<input type="checkbox"/> Hydrasleeve		Sampling Depth (m-pvc):	
Depth to Product (m-pvc): N/A	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump		<input type="checkbox"/> Waterra		Hydrasleeve Install time:	
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Other (specify)				Sampling Start Time:	
	Key Type (if applicable):	<input type="checkbox"/> Retrieved						Parameters	
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):						

WATER QUALITY PARAMETERS										
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity	
15:11	1.0	2.80	8/2	0.98	1211	5.73	25	20.0	Grey, cloudy, high turb., no odour	
15:14		2.64	13/2	0.24	1313	5.93	-3	20.2	" " med turb. "	
15:17		2.905	28/2	0.15	1293	5.92	-4	20.2	" " " "	
15:20		2.92	55/5	0.20	1290	5.95	-2	20.2	" " " "	
15:23		2.92	65/5	0.24	1281	5.95	1	20.2	Clear, no turb., no odour	
15:26		2.925	65/5	0.26	1285	5.95	5	20.2	" " " "	
15:30		2.93	65/5	0.29	1283	5.95	8	20.2	" " " "	
Sampled										

Acceptable Parameter Range: ± 10% DO, ± 3% E.C., ± 0.05 pH, ± 10 mV Redox, ± 0.2 °C Temp, ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1	x 60 mL metals (HNO ₃)		Bore volume calculation, bore condition, fate of tubing, redox correction etc. <i>Pump set 0.3m above bottom of well.</i>	
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2	x 250 mL Plastic			
		1 60mL Purple						

Approval and Distribution			
<i>[Signature]</i>	18/5/16	<i>[Signature]</i>	22.5.16
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
<i>[Signature]</i>	24.7.16	Distribution: Project Central File	
Project Manager Signature	Date		

FIELD WORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: **GW28**

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	18/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Zac O'Connor		

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		Well Development or Well Sampling Event? (circle)	
Date of GW Level:	18/5/16	Bore Radius (mm):	100	Chem Kit Serial No.:	<input checked="" type="checkbox"/> Decontaminated	Low Flow: Pump rate:	58/2	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	1.326	Screen Interval (m):		Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth:	1.90	Hydrasleeve Type:	
Bore Depth (m-pvc):		Casing Radius (mm):	50	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):		Cover Type (gatic/stick up):		(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method:	<input type="checkbox"/> Downhole	<input type="checkbox"/> Other (specify)	Micro purge	Sampling Start Time:	Hydrasleeve out
		Key Type (if applicable):		<input type="checkbox"/> Retrieved					Parameters
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):			

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
8:58	1.0	1.452	18/2	0.67	3730	7.51	-248	18.3	
9:01	2.0	1.421	58/2	0.23	3570	7.46	-255	18.4	Dark grey, high turbidity, sl. odour
9:04	2.5	1.393	58/2	0.16	3570	7.45	-257	18.4	
9:07	3.0	1.380		0.08	3490	7.44	-258	18.3	
9:10	3.5	1.290		0.04	3420	7.42	-258	18.2	
9:13	4.0	1.38		0.01	3390	7.41	-258	18.2	
9:16	4.5	1.38		0.01	3350	7.39	-257	18.2	
9:19	5.0	1.38		0.01	3340	7.39	-256	18.2	

Acceptable Parameter Range: ± 10% DO, ± 3% E.C., ± 0.05 pH, ± 10 mV Redox, ± 0.2 °C Temp

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			± 10% turbidity (if using a turbidity meter)	
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic			Bore volume calculation, bore condition, fate of tubing, redox correction etc.	

Commence purging at 8:55.

Approval and Distribution	
Fieldwork Staff Signature: <i>[Signature]</i> Date: 24-7-16	Checker Name and Signature: <i>[Signature]</i> Date: 22-5-16
Project Manager Signature: _____ Date: _____	Distribution: Project Central File

FIELDWORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: GW29

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	15/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Toni Henderson	<u>Well Development or Well Sampling Event? (circle)</u>	

GENERAL BORE INFORMATION		PARAMETER INFO		DECONTAMINATION		SAMPLING METHOD		HYDRASLEEVE INFO	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: <u>15/5</u>		Intake depth:		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): <u>3.025</u>	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Bailer <input type="checkbox"/> Hydrasleeve		Peristaltic Pump <input type="checkbox"/> Waterra		Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: <u>Y / N</u>	<input type="checkbox"/> Disposable	Other (specify):		Other (specify):		Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): <u>N/A</u>	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify):					Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole					Sampling Start Time:		Hydrasleeve out
	Key Type (if applicable):	<input type="checkbox"/> Retrieved							Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):				

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
08:27	1.01	3.095	10/5	3.04	1508	7.04	-58	17.5	Brown, cloudy, red turb, no od.
08:30		3.043	12/3	1.47	1508	6.75	-57	15.0	" " " "
08:33		3.054	12/3	1.15	1487	6.89	-56	18.3	" " " "
08:36		3.082	13/2	0.69	1426	6.85	-164	18.9	" " " "
08:39		3.060	15/5	0.63	1434	6.87	-172	19.0	" " " "
08:42		3.035	15/5	0.70	1426	6.70	-180	18.9	" " " "
08:45		3.03	15/5	0.72	1430	6.70	-177	18.8	Clear, brown tinge, no turb, no od. no sh.
----- sampled -----									
* DO OFF TO STABILISE.									

Acceptable Parameter Range: ± 10% DO, ± 3% E.C., ± 0.05 pH, ± 10 mV Redox, ± 0.2 °C Temp, ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	1 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. <u>Pump set 0.15m from bottom of well, not a large water column.</u>	
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	2 x 250 mL Plastic				
		1 60mL Purple						

Approval and Distribution			
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
<u>[Signature]</u>	<u>24.7.16.</u>	<u>[Signature]</u>	<u>22.5.16</u>
Project Manager Signature	Date	Distribution: Project Central File	

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FIELD WORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: *GW230*

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Zac O'Connor
				Sample Date:	18/05/16

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD		Well Development or Well Sampling Event? (circle)	
Date of GW Level:	Bore Radius (mm): <i>100</i>	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: <i>CPM 3</i>		HYDRASLEEVE INFO		Monitoring sequence followed (number in order):	
Depth to GW (m-pvc): <i>2.802</i>	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth: <i>3.4</i>		Hydrasleeve Size:		Gauging	
Bore Depth (m-pvc):	Casing Radius (mm): <i>50</i>	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailor <input type="checkbox"/> Hydrasleeve		Hydrasleeve Type:		Hydrasleeve in	
Depth to Product (m-pvc):	Cover Type (gatic/stick up): <i>Gatic</i>	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra		Sampling Depth (m-pvc):		Hydrasleeve out	
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole	<input type="checkbox"/> Other (specify) <i>Micropurge</i>		Sampling Start Time:		Parameters		
	Key Type (if applicable):	<input type="checkbox"/> Retrieved							
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):				

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
<i>1326</i>	<i>1.2</i>	<i>2.843</i>	<i>17/3</i>	<i>1.06</i>	<i>2110</i>	<i>3.25</i>	<i>312</i>	<i>19.5</i>	<i>Yellow/brown low turbidity, no odour</i>
<i>1329</i>	<i>2.4</i>	<i>2.861</i>		<i>0.48</i>	<i>2050</i>	<i>2.92</i>	<i>449</i>	<i>19.5</i>	
<i>1332</i>	<i>3.6</i>	<i>2.884</i>	↓	<i>0.37</i>	<i>2170</i>	<i>2.96</i>	<i>450</i>	<i>19.5</i>	
<i>1335</i>	<i>4.4</i>	<i>2.886</i>	<i>28/2</i>	<i>0.35</i>	<i>2190</i>	<i>2.96</i>	<i>439</i>	<i>19.5</i>	
<i>1338</i>	<i>5.2</i>	<i>2.855</i>	↓	<i>0.37</i>	<i>2210</i>	<i>2.96</i>	<i>425</i>	<i>19.5</i>	
<i>1341</i>	<i>6.0</i>	<i>2.841</i>	↓	<i>0.36</i>	<i>2240</i>	<i>2.96</i>	<i>428</i>	<i>19.5</i>	

Acceptable Parameter Range: ± 10% DO, ± 3% E.C., ± 0.05 pH, ± 10 mV Redox, ± 0.2 °C Temp

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION	FIELD COMMENTS
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)		Bore volume calculation, bore condition, fate of tubing, redox correction etc. <i>Commence purging at 1323</i>
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic		

Approval and Distribution			
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
<i>[Signature]</i>	<i>24-7-16</i>	<i>[Signature]</i>	<i>22-5-16</i>
Project Manager Signature	Date	Distribution: Project Central File	

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FIELD WORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: GW31

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Zac O'Connor
GENERAL BORE INFORMATION				Sample Date:	18/05/16

Date of GW Level:	Bore Radius (mm): <u>100</u>	Chem Kit Serial No.:	DECONTAMINATION	Well Development or Well Sampling Event? (circle)	
Depth to GW (m-pvc): <u>1.386</u>	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate: <u>2 CPM</u> Intake depth: <u>1.95</u>	
Bore Depth (m-pvc):	Casing Radius (mm): <u>50</u>	Corrected Redox: <u>Y / N</u>	<input type="checkbox"/> Dedicated		
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer	
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	
Calculated bore volume (L):	Key Type (if applicable):	<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify) <u>Micropurge</u>	
Includes/ excludes bore annulus (circle)		# purge volumes removed:	Total purged volume (L):		

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10:59	0.6	1.442	28/2	4.10	7530	6.68	-65	18.4	<u>Light yellow/brown. Low turbidity. No odour.</u>
11:02	1.2	1.450		3.12	7950	6.69	-67	18.4	
11:05	1.8	1.471		3.09	8020	6.70	-69	18.3	
11:08	2.4	1.468		2.01	8430	6.71	-65	18.2	
11:11	3.0	1.470		1.80	8740	6.62	-68	18.3	
11:14	4.0	1.465		1.02	9360	6.59	-81	18.2	
11:17	5.0	1.462		1.01	9510	6.58	-80	18.2	
11:20	6.0	1.458		1.04	9560	6.56	-82	18.2	

Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C

ANALYTES SAMPLED FOR:	BOTTLES COLLECTED	QA/QC INFORMATION	FIELD COMMENTS
Field Filtered:	Unfiltered:		<u>Bore volume calculation, bore condition, fate of tubing, redox correction etc.</u> <u>Commence purging at 10:56.</u>
	x 40 mL Vial (HCl)	x 60 mL Ferrous	
	x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	

Approval and Distribution	Date
Fieldwork Staff Signature: <u>[Signature]</u>	Date: <u>22-5-16</u>
Project Manager Signature: <u>[Signature]</u>	Date: <u>24-7-16</u>
Checker Name and Signature: <u>[Signature]</u>	Date: <u>22-5-16</u>

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FIELD WORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: GW32

Project Name: <u>FBURA</u>		Project Number: <u>60431087</u>		PM Name: <u>Avenyll Coyne</u>		Sample Date: <u>18/5/16</u>	
Client: <u>EPA - Victoria</u>		Project Location: <u>Fisherman's Bend, Port Melbourne</u>		Fieldwork Staff: <u>Zac O'Connor</u>		Well Development or Well Sampling Event? (circle)	
GENERAL BORE INFORMATION				PARAMETER INFO.		DECONTAMINATION	
Date of GW Level: <u>18/05/16</u>	Bore Radius (mm): <u>75</u>	Chem Kit Serial No.:		<input type="checkbox"/> Decontaminated		SAMPLING METHOD:	
Depth to GW (m-pvc): <u>2.212</u>	Screen Interval (m):	Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc):	Casing Radius (mm): <u>25</u>	Corrected Redox: <u>Y / N</u>		<input type="checkbox"/> Disposable		HYDRASLEEVE INFO	
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)		<input type="checkbox"/> Other (specify)			
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole		<input checked="" type="checkbox"/> Peristaltic Pump		Low Flow: Pump rate:	
Calculated bore volume (L):	Key Type (if applicable):	<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)		Intake depth: <u>3.10</u>	
Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):		Hydrasleeve Size:	
						Hydrasleeve Type:	
						Sampling Depth (m-pvc):	
						Hydrasleeve Install time:	
						Sampling Start Time:	
						Monitoring sequence followed (number in order):	
						Gauging	
						Hydrasleeve in	
						Hydrasleeve out	
						Parameters	

WATER QUALITY PARAMETERS

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or μ S/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
7:46	1.0	2.345		3.21	11360	6.82	-81	19.0	Light grey, low turbidity, mod. odour
7:58	2.0	2.288		1.25	11640	6.70	-177	18.4	
8:01	2.5	2.321		1.20	11670	6.70	-184	17.8	
8:08	2.8	2.336		0.88	11920	6.67	-235	17.2	
8:13	3.0	2.342		0.47	12320	6.67	-261	17.2	
8:19	3.2	2.324		0.15	12740	6.67	-269	16.9	
8:23	3.4	2.319		0.13	13000	6.67	-273	16.7	
				0.12	12900	6.67	-276	16.7	

Acceptable Parameter Range: $\pm 10\%$ $\pm 3\%$ ± 0.05 ± 10 mV ± 0.2 °C

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS		
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			± 10% turbidity (if using a turbidity meter)		
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic					
		Approval and Distribution					Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
Fieldwork Staff Signature		Date		Checker Name and Signature		Date			
<u>[Signature]</u>		<u>24-7-16</u>		<u>[Signature]</u>		<u>22-5-16</u>			
Project Manager Signature		Date		Distribution: Project Central File					
<u>[Signature]</u>		<u>24-7-16</u>							

Commence purging at 7:43.
Peristaltic used due to small well diameter.
Pump switched off at 7:47 to allow recovery.
Pump switched on at 7:55

FIELD WORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: GW33

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Zac O'Connor
				Sample Date:	17/05/16

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	17/05/16	Bore Radius (mm):	100	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate:	# 17/3	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	2.200	Screen Interval (m):		Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth:	3.05	Hydrasleeve Type:	
Bore Depth (m-pvc):		Casing Radius (mm):	50	Corrected Redox:	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailor	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):		Cover Type (gatic/stick up):	Gatic	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method:	<input type="checkbox"/> Downhole	<input type="checkbox"/> Other (specify)		Sampling Start Time:	Hydrasleeve out
		Key Type (if applicable):		<input type="checkbox"/> Retrieved					Parameters
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):			

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
12 08	1.0	2.348	17/6	2.56	1620	6.96	-162	21.2	Light grey, low turbidity, no odour.
12 11	2.0	2.353		1.72	1593	6.83	-163	21.6	
12 14	3.0	2.358		1.30	1587	6.77	-167	21.7	Light grey/brown, no turb., no odour.
12 17	4.0	2.366		0.90	1587	6.74	-170	21.8	
12 20	5.0	2.370		0.55	1595	6.74	-175	21.9	
12 22	6.0	2.370		0.43	1598	6.74	-177	22.0	
12 26	7.0	2.371		0.41	1599	6.74	-177	22.0	
12 27	8.0	2.389		0.39	1601	6.73	-177	22.0	

Acceptable Parameter Range: ± 10% DO, ± 3% E.C., ± 0.05 pH, ± 10 mV Redox, ± 0.2 °C Temp, ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.	
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic				

Approval and Distribution			
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
<i>[Signature]</i>	24-7-16	<i>[Signature]</i>	22-5-16
Project Manager Signature	Date	Distribution: Project Central File	

FIELD WORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: GW34

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Sample Date:	17/5/16
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Zac O'Connor		

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO.	
Date of GW Level:	17/5/16	Bore Radius (mm):	100	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate:		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	1.410	Screen Interval (m):		Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth:		Hydrasleeve Type:	
Bore Depth (m-pvc):		Casing Radius (mm):	50	Corrected Redox:	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):		Cover Type (gatic/stick up):	Gatic	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method:	<input type="checkbox"/> Downhole	<input type="checkbox"/> Other (specify)		Sampling Start Time:	Hydrasleeve out
		Key Type (if applicable):			<input type="checkbox"/> Retrieved				Parameters
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):			

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
11:25	1.0	1.508	18/2	0.98	2990	6.85	-273	20.5	Dark grey, low-mid turbidity, sulfurous odour (egg smell)
11:28	1.6	1.500	28/2	0.27	3050	6.84	-277	20.7	
11:31	2.1	1.488	28/2	0.10	3210	6.80	-278	20.7	
11:34	2.6	1.487	28/2	0.05	3310	6.77	-280	20.7	
11:37	3.1	1.488	28/2	0.03	3350	6.76	-281	20.7	
11:40	35.6	1.500	28/2	0.03	3380	6.75	-281	20.7	Light grey, low turbidity, sulfurous odour.
11:43	4.1	1.477	28/2	0.02	3390	6.75	-281	20.7	

Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION	FIELD COMMENTS
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)		Bore volume calculation, bore condition, fate of tubing, redox correction etc. <i>Commenced purging at 11:22</i>
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic		

Approval and Distribution			
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
<i>[Signature]</i>		<i>[Signature]</i>	22.5.16
Project Manager Signature	Date	Distribution: Project Central File	
<i>[Signature]</i>	24.7.16		

FIELD WORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Bore ID:	GW35
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Zac O'Connor	Sample Date:	17/05/16

GENERAL BORE INFORMATION		PARAMETER INFO		DECONTAMINATION		SAMPLING METHOD		HYDRASLEEVE INFO	
Date of GW Level:	17/5/16	Bore Radius (mm):	100	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate:		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	2.600	Screen Interval (m):		Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth:		Hydrasleeve Type:	
Bore Depth (m-pvc):		Casing Radius (mm):	50	Corrected Redox:	<input type="checkbox"/> Disposable	Bailer	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	-	Cover Type (gatic/stick up):	Gatic	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)	Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	NA	Bore Locked (YES/NO):		Parameter method:	<input type="checkbox"/> Downhole	Other (specify)		Sampling Start Time:	Hydrasleeve out
Calculated bore volume (L):		Key Type (if applicable):		<input type="checkbox"/> Retrieved					Parameters
		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):			

WATER QUALITY PARAMETERS									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10:34	1.0	2.696	11/4	1.82	4020	6.41	-214	19.7	
10:37	1.6	2.740	13/2	0.91	4170	6.41	-228	20.2	Clear, no turbidity, no odour.
10:40	2.1	2.744	29/2	0.56	4190	6.42	-227	20.3	
10:41	2.6	2.740	29/2	0.15	4180	6.45	-224	20.3	Light grey, low turbidity
10:46	3.1	2.731	29/2	0.28	4130	6.61	-207	20.2	
10:49	3.6	2.726		0.21	4090	6.52	-206	20.2	
10:52	4.1	2.720		0.24	4070	6.51	-204	20.2	
10:55	4.6	2.691		0.23	4080	6.51	-203	20.2	

Acceptable Parameter Range:		± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C
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ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.	
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic				

Approval and Distribution			
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
	24-7-16		22-5-16
Project Manager Signature	Date	Distribution: Project Central File	

Start purging at 10:31

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FIELD WORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: **GW36**

Project Name: FBURA	Project Number: 60431087	PM Name: Averyll Coyne	Sample Date: 17/05/16
Client: EPA - Victoria	Project Location: Fisherman's Bend, Port Melbourne	Fieldwork Staff: Zac O'Connor	Well Development or Well Sampling Event? (circle)

GENERAL BORE INFORMATION

Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:
Depth to GW (m-pvc): 2.670	Screen Interval (m):	Chem Kit Model:
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole
Calculated bore volume (L):	Key Type (if applicable):	<input type="checkbox"/> Retrieved
	Includes/ excludes bore annulus (circle)	# purge volumes removed:

DECONTAMINATION		SAMPLING METHOD:		HYDRASLEEVE INFO.	
<input checked="" type="checkbox"/> Decontaminated	<input type="checkbox"/> Dedicated	Low Flow: Pump rate: 1 1/4		Hydrasleeve Size:	Monitoring sequence followed (number in order):
<input type="checkbox"/> Disposable	<input type="checkbox"/> Other (specify)	Intake depth: 3.25		Hydrasleeve Type:	
		<input type="checkbox"/> Bailor	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	Gauging
		<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in
		<input type="checkbox"/> Other (specify) Microgauge		Sampling Start Time:	Hydrasleeve out
					Parameters

WATER QUALITY PARAMETERS

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
825	1.0	2.700	11/4	2.90	240	5.86	67	18.3	Light grey, low-mod. turbidity, no odour
828	2.0	2.741	11/4	1.85	2190	6.04	49	18.8	
831	3.0	2.758	12/3	1.33	2100	6.13	32	18.9	
834	4.0	2.771	12/3	0.95	2410	6.29	6	18.9	
837	4.5	2.771	13/2	0.69	2400	6.34	-23	18.9	
840	5.0	2.770		0.45	2380	6.51	-54	19.0	
843	5.5	2.8768		0.42	2360	6.52	-61	19.0	
846	6.0	2.766		0.39	2290	6.55	-69	19.0	
849	7.0	2.764		0.38	2270	6.56	-74	19.0	

Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		± 10% turbidity (if using a turbidity meter)
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			FIELD COMMENTS
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic			

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Purging Start time: 8:22

Approval and Distribution

Fieldwork Staff Signature <i>[Signature]</i>	Date 22-5-16	Checker Name and Signature <i>[Signature]</i>	Date 22-5-16
Project Manager Signature <i>[Signature]</i>	Date 24-7-16		

Distribution: Project Central File

FIELD WORK QUALITY MANUAL

FQM-5.05-F1 - GROUNDWATER SAMPLING AND PURGING RECORD

Project Name:	FBURA	Project Number:	60431087	PM Name:	Averyll Coyne	Bore ID:	GLW37
Client:	EPA - Victoria	Project Location:	Fisherman's Bend, Port Melbourne	Fieldwork Staff:	Zac O'Connor	Sample Date:	17/05/16

GENERAL BORE INFORMATION		PARAMETER INFO.		DECONTAMINATION		SAMPLING METHOD		Well Development or Well Sampling Event? (circle)	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Low Flow: Pump rate:		Intake depth: 3.52		Hydrasleeve Size:	Monitoring sequence followed (number in order): Gauging Hydrasleeve in Hydrasleeve out Parameters
Depth to GW (m-pvc): 2.921	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Bailer <input type="checkbox"/> Hydrasleeve		Peristaltic Pump <input type="checkbox"/> Waterra		Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	Other (specify)		Other (specify)		Sampling Depth (m-pvc):	
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	<input type="checkbox"/> Other (specify)					Hydrasleeve Install time:	
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method:	<input type="checkbox"/> Downhole					Sampling Start Time:	
Calculated bore volume (L):	Key Type (if applicable):	<input type="checkbox"/> Retrieved							
Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):					

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)		E.C. (mS/cm or gS/cm)		pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
				(ppm)	(mg/L)	(mS/cm)	(gS/cm)				
9:22	1.0	3.102	11/4	6.04	1312	7.28	-27	18.6			clear, no turbidity, no odour
9:25	1.5	3.129	18/2	5.04	1296	7.21	-9	18.8			
9:42	2.0	3.011	18/2	4.71	1294	7.35	8	18.0			
9:45	2.5	3.019	18/2	3.70	1288	7.19	3	18.6			
9:48	2.9 2.9	3.020	29/1	3.10	1288	7.18	1	18.5			
9:51	3.3	3.019	↓	3.08	1288	7.16	2	18.4			
9:54	3.7	3.021	↓	3.07	1289	7.15	3	18.4			
9:57	4.1	3.020	↓	3.09	1290	7.14	1	18.4			

Acceptable Parameter Range:		± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C
-----------------------------	--	-------	------	--------	---------	----------

ANALYTES SAMPLED FOR:		BOTTLES COLLECTED			QA/QC INFORMATION		FIELD COMMENTS	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. Purging Start Time: 9:19 Pump switched off at 9:27; allow for recovery Pump turned back on at 9:40	
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic				

Approval and Distribution	
Fieldwork Staff Signature: _____ Date: _____	Checker Name and Signature: <u>Zac O'Connor</u> Date: <u>22-5-16</u>
Project Manager Signature: <u>[Signature]</u> Date: <u>24-7-16</u>	Distribution: Project Central File

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FIELD WORK QUALITY MANUAL

FQM-5.05-F1 – GROUNDWATER SAMPLING AND PURGING RECORD

Bore ID: **GW38**

Project Name: **FBURA** Project Number: **60431087**
 Client: **EPA - Victoria** Project Location: **Fisherman's Bend, Port Melbourne**
 PM Name: **Averyll Coyne**
 Fieldwork Staff: **Zac O'Connor** Sample Date: **17/05/16**

GENERAL BORE INFORMATION

Date of GW Level: **17/05/16**
 Depth to GW (m-pvc): **3.620**
 Bore Radius (mm): **100**
 Screen Interval (m):
 Casing Radius (mm): **50**
 Cover Type (gatic/stick up): **Guiric**
 Bore Depth (m-pvc):
 Depth to Product (m-pvc):
 Product Thickness (m):
 Bore Locked (YES/NO): **N**
 Key Type (if applicable):
 Calculated bore volume (L):
 Includes/ excludes bore annulus (circle)

PARAMETER INFO.

Chem Kit Serial No.:
 Chem Kit Model:
 Corrected Redox: **Y / N**
 (The correction to apply is probe dependent)
 Parameter method:
 Downhole
 Retrieved

DECONTAMINATION

Decontaminated
 Dedicated
 Disposable
 Other (specify)

SAMPLING METHOD:

Low Flow: Pump rate: **11.5/3.5**
 Intake depth: **4.2**
 Bailer
 Peristaltic Pump
 Waterra
 Other (specify) **Micropurge**

Well Development or Well Sampling Event? (circle)

Hydrasleeve Size:
 Hydrasleeve Type:
 Sampling Depth (m-pvc): **4.2**
 Hydrasleeve Install time:
 Sampling Start Time:
 Monitoring sequence followed (number in order):
 Gauging
 Hydrasleeve in
 Hydrasleeve out
 Parameters

purge volumes removed:

Total purged volume (L):

WATER QUALITY PARAMETERS

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
7:36	1	2.691	4.5/3.5	1.31	5420	7.56	95	18.8	
7:39	2	3.6702	12/3	0.99	5390	7.50	90	19.3	Light brown, sl. turbid, no odour
7:42	3	3.711		0.67	5450	7.41	86	19.5	
7:45	4	3.722	↓	0.48	5290	7.46	81	19.5	Becoming lighter in col.w.
7:48	5	3.719	12.5/2.5	0.32	5300	7.46	76	19.5	
7:51	6	3.718		0.30	5310	7.47	74	19.4	
7:54	7	3.717		0.29	5340	7.48	70	19.4	

Acceptable Parameter Range:

± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C

ANALYTES SAMPLED FOR:

Field Filtered:
 Unfiltered:

BOTTLES COLLECTED

x 40 mL Vial (HCl) x 60 mL Ferrous
 x 40 mL Vial (H₂SO₄) x 100 mL Amber
 x 60 mL metals (HNO₃)
 x 250 mL Plastic

QA/QC INFORMATION

± 10% turbidity (if using a turbidity meter)

FIELD COMMENTS

Bore volume calculation, bore condition, fate of tubing, redox correction etc.
 Purging start time: **7:33**

Approval and Distribution

Fieldwork Staff Signature
 Project Manager Signature

Date
24-7-16

Checker Name and Signature
 Date
22-5-16

Distribution: Project Central File

Appendix C

Laboratory Transcripts

Form:



Chain of Custody & Analysis Request Form

AECOM - Melbourne
Level 9, 8 Exhibition Street
Melbourne VIC 3000

Tel: 61 3 9653 1234
Fax: 61 3 9653 1234
Email: zachary.oconnor@aecom.com
averyll.coyne@aecom.com

Laboratory Details

Lab. Name: Envirolab
Lab. Address: Dalmore Dv, Scoresby
Contact Name: Marian Saad
Lab. Ref:
Tel: 03 9763 2500
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: Fishermans Bend

Project Number: 60431087

Purchase Order Number: 60431087, 1.4

Sample collected by: Z O'Connor, T Henderson

Sample Results to be returned to: averyll.coyne@aecom.com; zachary.oconnor@aecom.com

Specifications:

1. Urgent TAT required? (please circle: 24hr 48hr days) Yes No N/A

2. Fast TAT Guarantee Required? Yes No N/A

3. Is any sediment layer present in waters to be excluded from extractions? Yes No N/A

4. Special storage requirements? ICE Yes No N/A

5. Preservation requirements? ICE Yes No N/A

6. Other requirements? Fax Hard copy Email Yes No N/A

7. Report Format: Excel (Esdat Format) 8. Project Manager: AVERYLL COYNE tel: 9653 8072

Analysis Request

Lab. ID	Sample ID	Sampling Date & Time (on)	Sampling Date & Time (off)	Matrix			Preservation				Container (No. & type)
				soil	water	other	filled	acid	ice	other	
1	QL02	17/05/16			X					X	6
2	QL04	17/05/16			X					X	6

Analysis Request												Remarks & comments
IONIC BALANCE	DISSOLVED METALS (B ANALY)	ADDITIONAL METALS (AL, FE, CR)	NOx	TPH / BTEX / PAH	pH, TDS	TOTAL OXIDISED SULFUR						
X	X	X	X	X	X	X						
X	X	X	X	X	X	X						

ENVIROLAB
10 Dalmore Drive
Caribbean Park
Scoresby VIC 3179
Ph: (03) 9763 2500

Job No: 8547

Date Received: 19/5/16
Time Received: 12:30
Received by: [Signature]
Temp: Cool/Ambient
Cooling: Ice/icepack
Security: Intact/Broken/None

Relinquished By:
Name: Z. O'CONNOR
Date: 19/05/16
of: _____
Time: _____

Received by:
Name: [Signature]
Date: [Signature]
of: _____
Time: _____

Received in good condition? Yes/No/NA
Samples received chilled? Yes/No/NA

Method of Shipment Courier Postal By Hand
Consignment Note No.
Transport Co:

Relinquished By:
Name: _____
Date: _____
of: _____
Time: _____

Received by:
Name: _____
Date: _____
of: _____
Time: _____

Received in good condition? Yes/No/NA
Samples received chilled? Yes/No/NA

Method of Shipment Courier Postal By Hand
Consignment Note No.
Transport Co:



1 Dalmore Drive, Scoresby, Victoria 3179
tel: +61 3 9763 2500

email: melbourne@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Melbourne | ABN 37 112 535 645 - 002

CERTIFICATE OF ANALYSIS

8547

Client:

AECOM Australia Pty Ltd (Melbourne)
Level 9, 8 Exhibition St
Melbourne
VIC 3000

Attention: Averyll Coyne

Sample log in details:

Your Reference: **60431087, 1.4**
No. of samples: 2 waters
Date samples received / completed instructions received 19/05/2016 / 20/05/2016

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data. Samples were analysed as received from the client. Results relate specifically to the samples as received. Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date: 27/05/16 / 27/05/16
Date of Preliminary Report: Not Issued
NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Analisa Mathrick
Laboratory Manager



vTRH(C6-C10)/BTEXNinWater	UNITS	8547-1	8547-2
Our Reference:	-----	QC02	QC04
Your Reference	-----	17/05/2016	17/05/2016
Date Sampled		Water	Water
Type of sample			
Date extracted	-	24/05/2016	24/05/2016
Date analysed	-	24/05/2016	24/05/2016
TRHC ₆ - C ₉	µg/L	<10	<10
TRHC ₆ - C ₁₀	µg/L	<10	<10
TRHC ₆ - C ₁₀ less BTEX (F1)	µg/L	<10	<10
Benzene	µg/L	<1	<1
Toluene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
o-xylene	µg/L	<1	<1
Naphthalene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	99	97
Surrogate toluene-d8	%	97	95
Surrogate 4-BFB	%	101	101

TRH Water(C10-C40) NEPM	UNITS	8547-1	8547-2
Our Reference:	-----	QC02	QC04
Your Reference	-----	17/05/2016	17/05/2016
Date Sampled			
Type of sample		Water	Water
Date extracted	-	24/05/2016	24/05/2016
Date analysed	-	24/05/2016	24/05/2016
TRHC ₁₀ - C ₁₄	µg/L	<50	<50
TRHC ₁₅ - C ₂₈	µg/L	<100	<100
TRHC ₂₉ - C ₃₆	µg/L	<100	<100
TRH>C ₁₀ - C ₁₆	µg/L	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50	<50
TRH>C ₁₆ - C ₃₄	µg/L	<100	<100
TRH>C ₃₄ - C ₄₀	µg/L	<100	<100
Surrogate o-Terphenyl	%	84	49

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	8547-1 QC02 17/05/2016 Water	8547-2 QC04 17/05/2016 Water
Date extracted	-	24/05/2016	24/05/2016
Date analysed	-	24/05/2016	24/05/2016
Naphthalene	µg/L	<1	<1
Acenaphthylene	µg/L	<1	<1
Acenaphthene	µg/L	<1	<1
Fluorene	µg/L	<1	<1
Phenanthrene	µg/L	<1	<1
Anthracene	µg/L	<1	<1
Fluoranthene	µg/L	<1	<1
Pyrene	µg/L	<1	<1
Benzo(a)anthracene	µg/L	<1	<1
Chrysene	µg/L	<1	<1
Benzo(b,j&k)fluoranthene	µg/L	<2	<2
Benzo(a)pyrene	µg/L	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1
Total +ve PAH's	µg/L	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5
Surrogate <i>p</i> -Terphenyl-d ₁₄	%	104	106

HM in water - dissolved	UNITS	8547-1	8547-2
Our Reference:	-----	QC02	QC04
Your Reference	-----	17/05/2016	17/05/2016
Date Sampled			
Type of sample		Water	Water
Date prepared	-	24/05/2016	24/05/2016
Date analysed	-	24/05/2016	24/05/2016
Arsenic-Dissolved	µg/L	16	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	<1	<1
Lead-Dissolved	µg/L	<1	<1
Nickel-Dissolved	µg/L	18	25
Zinc-Dissolved	µg/L	5	2
Mercury-Dissolved	µg/L	<0.05	<0.05
Aluminium-Dissolved	µg/L	<10	<10
Iron-Dissolved	µg/L	26,000	13,000
Selenium-Dissolved	µg/L	<1	<1

Ion Balance			
Our Reference:	UNITS	8547-1	8547-2
Your Reference	-----	QC02	QC04
Date Sampled	-----	17/05/2016	17/05/2016
Type of sample		Water	Water
Date prepared	-	20/05/2016	20/05/2016
Date analysed	-	20/05/2016	20/05/2016
Calcium - Dissolved	mg/L	140	190
Potassium - Dissolved	mg/L	22	21
Sodium - Dissolved	mg/L	64	130
Magnesium - Dissolved	mg/L	68	32
Hydroxide Alkalinity (OH ⁻) as CaCO ₃	mg/L	<5	<5
Bicarbonate Alkalinity as CaCO ₃	mg/L	720	430
Carbonate Alkalinity as CaCO ₃	mg/L	<5	<5
Total Alkalinity as CaCO ₃	mg/L	720	430
Sulphate, SO ₄	mg/L	<1	180
Chloride, Cl	mg/L	71	34
Ionic Balance	%	-0.80	15

Client Reference: 60431087, 1.4

Miscellaneous Inorganics			
Our Reference:	UNITS	8547-1	8547-2
Your Reference	-----	QC02	QC04
Date Sampled	-----	17/05/2016	17/05/2016
Type of sample		Water	Water
Date prepared	-	20/05/2016	20/05/2016
Date analysed	-	20/05/2016	20/05/2016
Total Dissolved Solids (grav)	mg/L	700	980
NOx as N in water	mg/L	<0.005	<0.005
pH	pH Units	7.8	7.8
Total Oxidisable Sulfur Stos	%	2	140

MethodID	Methodology Summary
Org-016	<p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p> <p>Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.</p>
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-003	<p>Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.</p> <p>F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.</p> <p>Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).</p>
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater 2013.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA 22nd ED, 4110-B. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Inorg-041	Gravimetric determination of the total solids content of water based on APHA latest edition 2540B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180oC +/-5oC.
Inorg-055	Nitrate - determined colourimetrically. Soils are analysed following a water extraction.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only as analysis outside of the APHA storage times.
Inorg-077	<p>Total Oxidisable Sulfur (STOS) is the calculated difference between Total Sulfur (ST) and 4M HCl Extractable Sulfur (SHCl).</p> <p>Method: Based on Methods 20A, 20B, 20C – Acid Sulfate Soils Laboratory Methods guidelines, ver 2.1, June 2004.</p>

Client Reference: 60431087, 1.4

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Water						Base II Duplicate II %RPD		
Date extracted	-			24/05/2016	[NT]	[NT]	LCS-1	24/05/2016
Date analysed	-			24/05/2016	[NT]	[NT]	LCS-1	24/05/2016
TRHC ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-1	104%
TRHC ₆ - C ₁₀	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-1	104%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-1	108%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-1	118%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-1	98%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-1	97%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-1	98%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	98	[NT]	[NT]	LCS-1	98%
Surrogate toluene-d8	%		Org-016	99	[NT]	[NT]	LCS-1	103%
Surrogate 4-BFB	%		Org-016	101	[NT]	[NT]	LCS-1	102%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
TRH Water(C10-C40) NEPM						Base II Duplicate II %RPD		
Date extracted	-			24/05/2016	[NT]	[NT]	LCS-1	24/05/2016
Date analysed	-			24/05/2016	[NT]	[NT]	LCS-1	24/05/2016
TRHC ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-1	93%
TRHC ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-1	110%
TRHC ₂₉ - C ₃₆	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-1	112%
TRH>C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-1	93%
TRH>C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-1	110%
TRH>C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-1	112%
Surrogate o-Terphenyl	%		Org-003	85	[NT]	[NT]	LCS-1	127%

Client Reference: 60431087, 1.4

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Water						Base II Duplicate II %RPD		
Date extracted	-			24/05/2016	[NT]	[NT]	LCS-1	24/05/2016
Date analysed	-			24/05/2016	[NT]	[NT]	LCS-1	24/05/2016
Naphthalene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-1	70%
Acenaphthylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-1	64%
Phenanthrene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-1	70%
Anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-1	78%
Pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-1	80%
Benzo(a)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-1	76%
Benzo(b,j&k) fluoranthene	µg/L	2	Org-012	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-1	76%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Surrogate <i>p</i> -Terphenyl-d ₁₄	%		Org-012	124	[NT]	[NT]	LCS-1	72%

Client Reference: 60431087, 1.4

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
Date prepared	-			24/05/2016	[NT]	[NT]	LCS-1	24/05/2016
Date analysed	-			24/05/2016	[NT]	[NT]	LCS-1	24/05/2016
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-1	101%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-1	101%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-1	103%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-1	102%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-1	98%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-1	98%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-1	102%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	LCS-1	104%
Aluminium-Dissolved	µg/L	10	Metals-022 ICP-MS	<10	[NT]	[NT]	LCS-1	105%
Iron-Dissolved	µg/L	10	Metals-022 ICP-MS	<10	[NT]	[NT]	LCS-1	92%
Selenium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-1	95%

Client Reference: 60431087, 1.4

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Ion Balance						Base Duplicate %RPD		
Date prepared	-			20/05/2016	8547-1	20/05/2016 20/05/2016	LCS-1	20/05/2016
Date analysed	-			20/05/2016	8547-1	20/05/2016 20/05/2016	LCS-1	20/05/2016
Calcium - Dissolved	mg/L	0.5	Metals-020 ICP-AES	<0.5	8547-1	140 140 RPD: 0	LCS-1	101%
Potassium - Dissolved	mg/L	0.5	Metals-020 ICP-AES	<0.5	8547-1	22 21 RPD: 5	LCS-1	97%
Sodium - Dissolved	mg/L	0.5	Metals-020 ICP-AES	<0.5	8547-1	64 64 RPD: 0	LCS-1	97%
Magnesium - Dissolved	mg/L	0.5	Metals-020 ICP-AES	<0.5	8547-1	68 39 RPD: 54	LCS-1	99%
Hydroxide Alkalinity (OH ⁻) as CaCO ₃	mg/L	5	Inorg-006	<5	8547-1	<5 [N/T]	[NR]	[NR]
Bicarbonate Alkalinity as CaCO ₃	mg/L	5	Inorg-006	<5	8547-1	720 [N/T]	LCS-1	108%
Carbonate Alkalinity as CaCO ₃	mg/L	5	Inorg-006	<5	8547-1	<5 [N/T]	[NR]	[NR]
Total Alkalinity as CaCO ₃	mg/L	5	Inorg-006	<5	8547-1	720 [N/T]	LCS-1	108%
Sulphate, SO ₄	mg/L	1	Inorg-081	<1	8547-1	<1 [N/T]	LCS-1	100%
Chloride, Cl	mg/L	1	Inorg-081	<1	8547-1	71 [N/T]	LCS-1	99%
Ionic Balance	%		Inorg-041	[NT]	8547-1	-0.80 [N/T]	[NR]	[NR]
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Miscellaneous Inorganics						Base Duplicate %RPD		
Date prepared	-			20/05/2016	[NT]	[NT]	LCS-1	20/05/2016
Date analysed	-			20/05/2016	[NT]	[NT]	LCS-1	20/05/2016
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	[NT]	[NT]	LCS-1	97%
NO _x as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	LCS-1	111%
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-1	99%
Total Oxidisable Sulfur Stos	%	0.01	Inorg-077	<0.01	[NT]	[NT]	[NR]	[NR]
QUALITY CONTROL	UNITS	Dup. Sm#		Duplicate		Spike Sm#	Spike % Recovery	
HM in water - dissolved				Base + Duplicate + %RPD				
Date prepared	-	[NT]		[NT]		8547-1	24/05/2016	
Date analysed	-	[NT]		[NT]		8547-1	24/05/2016	
Arsenic-Dissolved	µg/L	[NT]		[NT]		8547-1	100%	
Cadmium-Dissolved	µg/L	[NT]		[NT]		8547-1	99%	
Chromium-Dissolved	µg/L	[NT]		[NT]		8547-1	101%	
Copper-Dissolved	µg/L	[NT]		[NT]		8547-1	96%	
Lead-Dissolved	µg/L	[NT]		[NT]		8547-1	95%	
Nickel-Dissolved	µg/L	[NT]		[NT]		8547-1	93%	

Client Reference: 60431087, 1.4

QUALITY CONTROL HM in water - dissolved	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Zinc-Dissolved	µg/L	[NT]	[NT]	8547-1	95%
Mercury-Dissolved	µg/L	[NT]	[NT]	8547-1	100%
Aluminium-Dissolved	µg/L	[NT]	[NT]	8547-1	104%
Iron-Dissolved	µg/L	[NT]	[NT]	8547-1	#1
Selenium-Dissolved	µg/L	[NT]	[NT]	8547-1	99%

Report Comments:

METALS - #1 Percent recovery is not possible to report due to the high concentration of iron in the sample. However an acceptable recovery was obtained for the LCS.

TOS analysed by Envirolab Sydney. Report number 147072.

ION BALANCE - The mass imbalance may be caused by other ions that have not been measured and / or not included in Ionic Balance calculation.

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test
NR: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

SAMPLE RECEIPT ADVICE

Client Details	
Client	AECOM Australia Pty Ltd (Melbourne)
Attention	Averyll Coyne

Sample Login Details	
Your Reference	60431087, 1.4
Envirolab Reference	8547
Date Sample Received	19/05/2016
Date Instructions Received	20/05/2016
Date Results Expected to be Reported	27/05/2016

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	2 waters
Turnaround Time Requested	Standard
Temperature on receipt (°C)	1.8C
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

Please direct any queries to:

Chris De Luca	Analisa Mathrick
Phone: 03 9763 2500	Phone: 03 9763 2500
Fax: 03 9763 2633	Fax: 03 9763 2633
Email: cdeluca@envirolab.com.au	Email: amathrick@envirolab.com.au

Sample and Testing Details on following page

CERTIFICATE OF ANALYSIS

Work Order : EM1605749 Client : AECOM Australia Pty Ltd Contact : MS AVERYLL COYNE Address : LEVEL 9 8 EXHIBITION ST MELBOURNE VIC 3000 Telephone : +61 03 9653 1234 Project : 60431087 1.4 Order number : 60431087, 1.4 C-O-C number : ---- Sampler : ZACHARY OCONNOR Site : ---- Quote number : ---- No. of samples received : 53 No. of samples analysed : 52	Page : 1 of 69 Laboratory : Environmental Division Melbourne Contact : Carol Walsh Address : 4 Westall Rd Springvale VIC Australia 3171 Telephone : +61-3-8549 9608 Date Samples Received : 19-May-2016 13:50 Date Analysis Commenced : 20-May-2016 Issue Date : 30-May-2016 15:52
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Herman Lin	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

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

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

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

LOR = Limit of reporting

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

∅ = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- ED093F: EM1605749-007 & 034 cation results have been confirmed by re-preparation and re-analysis
- ED041G/ED045G: EM1605749 #7 and #34, chloride and Sulfate results have been confirmed by re-analysis.
- EG020F: Results for EM1605749-007, 008, 027, 033 and 034 have been confirmed by re-preparation and re-analysis.
- **EP080: Sample EM1605749-046 is positive for the C6-C9/C6-C10 bands due to VOC.**
- **EP074-WF: Sample EM1605749-026 has LOR raised for Bromomethane & Iodomethane due to matrix interference.**
- **EP074-WF: Acetone and Carbon Disulfide results in samples EM1605749-012 & -016 has been confirmed by re-extraction and re-analysis.**
- TDS by method EA-015 may bias high for EM1605749 #3, 5, 11, 13, 17, 18, 19, 21, 22, 24, 29, 30 and 34 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate; and major cations - calcium, magnesium, potassium, sodium and ammonia for #46
- Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate; and major cations - calcium, magnesium, potassium, sodium, aluminium and iron for #24.
- **EP080: ALS acknowledges a discrepancy between the sum of VOC analytes that fall within the C6-C9/C6-C10 TPH band and the reported C6-C9/C6-C10 TPH concentration for sample EM1605749-021. The variation is due to how the TPH band is quantified versus individual compound quantification. For individual compound quantification, a response factor based directly on the compound of interest is used. For TPH, a single response factor is employed to represent all possible compounds that fall within the C6-C9/C6-C10 band. This can give rise to the variation observed for this sample.**
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- ED043S: EM1605749- 007 & 034 Total Oxidised Sulfur as SO4 results have been confirmed by re-digestion and re-analysis
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW01	GW03	GW04	GW05	GW06
Client sampling date / time				[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[16-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-001	EM1605749-002	EM1605749-003	EM1605749-004	EM1605749-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.16	7.58	6.96	6.98	6.80	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2780	1400	1120	1250	3360	
ED037P: Alkalinity by PC Titrator									
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	1640	912	535	1110	1110	
Total Alkalinity as CaCO3	----	1	mg/L	1640	912	535	1110	1110	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	30	194	255	<1	962	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	----	----	
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	38	212	270	167	1010	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	856	117	24	158	479	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	32	171	212	100	427	
Magnesium	7439-95-4	1	mg/L	83	100	47	106	136	
Sodium	7440-23-5	1	mg/L	846	159	50	217	501	
Potassium	7440-09-7	1	mg/L	197	43	14	55	74	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.04	
Arsenic	7440-38-2	0.001	mg/L	0.003	0.009	0.003	0.010	0.013	
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	0.005	<0.001	<0.001	<0.001	0.002	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.001	<0.001	0.012	
Nickel	7440-02-0	0.001	mg/L	0.021	0.007	0.028	0.008	0.036	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.002	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.006	0.007	0.027	0.021	0.032	
Manganese	7439-96-5	0.001	mg/L	0.035	0.519	0.192	0.402	0.489	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	5.18	8.32	0.53	12.3	5.39	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW01	GW03	GW04	GW05	GW06
Client sampling date / time				[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[16-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-001	EM1605749-002	EM1605749-003	EM1605749-004	EM1605749-005	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.4	0.5	0.4	0.4	0.8	0.8
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	91.6	1.84	0.08	7.17	5.67	5.67
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.06	0.06
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.01	0.02	0.02	0.03	0.52	0.52
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	57.5	25.6	16.7	26.6	55.7	55.7
Total Cations	----	0.01	meq/L	----	----	----	----	----	----
Total Cations	----	0.01	meq/L	50.3	24.8	17.0	24.6	56.2	56.2
Ionic Balance	----	0.01	%	----	----	----	----	----	----
Ionic Balance	----	0.01	%	6.78	1.56	0.92	4.08	0.42	0.42
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	----	<1	----	<1	<1	<1
Toluene	108-88-3	1	µg/L	----	<1	----	<1	<1	<1
Ethylbenzene	100-41-4	1	µg/L	----	<1	----	<1	<1	<1
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	----	<1	----	<1	<1	<1
Styrene	100-42-5	1	µg/L	----	<1	----	<1	<1	<1
ortho-Xylene	95-47-6	1	µg/L	----	<1	----	<1	<1	<1
Isopropylbenzene	98-82-8	1	µg/L	----	<1	----	<1	<1	<1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW01	GW03	GW04	GW05	GW06
Client sampling date / time					[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[16-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-001	EM1605749-002	EM1605749-003	EM1605749-004	EM1605749-005	EM1605749-005
				Result	Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Propylbenzene	103-65-1	1	µg/L	----	<1	----	<1	<1	<1
1.3.5-Trimethylbenzene	108-67-8	1	µg/L	----	<1	----	<1	<1	<1
sec-Butylbenzene	135-98-8	1	µg/L	----	<1	----	<1	<1	<1
1.2.4-Trimethylbenzene	95-63-6	1	µg/L	----	<1	----	<1	<1	<1
tert-Butylbenzene	98-06-6	1	µg/L	----	<1	----	<1	<1	<1
p-Isopropyltoluene	99-87-6	1	µg/L	----	<1	----	<1	<1	<1
n-Butylbenzene	104-51-8	1	µg/L	----	<1	----	<1	<1	<1
EP074B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	10	µg/L	----	<10	----	<10	<10	<10
Vinyl Acetate	108-05-4	10	µg/L	----	<10	----	<10	<10	<10
2-Butanone (MEK)	78-93-3	10	µg/L	----	<10	----	<10	<10	<10
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	----	<10	----	<10	<10	<10
2-Hexanone (MBK)	591-78-6	10	µg/L	----	<10	----	<10	<10	<10
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L	----	<1	----	<1	<1	<1
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L	----	<1	----	<1	<1	<1
1.2-Dichloropropane	78-87-5	1	µg/L	----	<1	----	<1	<1	<1
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L	----	<2	----	<2	<2	<2
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L	----	<2	----	<2	<2	<2
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L	----	<1	----	<1	<1	<1
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L	----	<10	----	<10	<10	<10
Chloromethane	74-87-3	10	µg/L	----	<10	----	<10	<10	<10
Vinyl chloride	75-01-4	10	µg/L	----	<10.0	----	<10.0	<10.0	<10.0
Bromomethane	74-83-9	10	µg/L	----	<10	----	<10	<10	<10
Chloroethane	75-00-3	10	µg/L	----	<10	----	<10	<10	<10
Trichlorofluoromethane	75-69-4	10	µg/L	----	<10	----	<10	<10	<10
1.1-Dichloroethene	75-35-4	1	µg/L	----	<1	----	<1	<1	<1
Iodomethane	74-88-4	1	µg/L	----	<1	----	<1	<1	<1
Methylene chloride	75-09-2	5	µg/L	----	<5	----	<5	<5	<5
trans-1.2-Dichloroethene	156-60-5	1	µg/L	----	<1	----	<1	<1	<1
1.1-Dichloroethane	75-34-3	1	µg/L	----	<1	----	<1	<1	<1
cis-1.2-Dichloroethene	156-59-2	1	µg/L	----	<1	----	<1	<1	<1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW01	GW03	GW04	GW05	GW06
Client sampling date / time					[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[16-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-001	EM1605749-002	EM1605749-003	EM1605749-004	EM1605749-005
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.1-Trichloroethane	71-55-6	1	µg/L		----	<1	----	<1	<1
1.1-Dichloropropylene	563-58-6	1	µg/L		----	<1	----	<1	<1
Carbon Tetrachloride	56-23-5	1	µg/L		----	<1	----	<1	<1
1.2-Dichloroethane	107-06-2	1	µg/L		----	<1	----	<1	<1
Trichloroethene	79-01-6	1	µg/L		----	<1	----	<1	<1
Dibromomethane	74-95-3	1	µg/L		----	<1	----	<1	<1
1.1.2-Trichloroethane	79-00-5	1	µg/L		----	<1	----	<1	<1
1.3-Dichloropropane	142-28-9	1	µg/L		----	<1	----	<1	<1
Tetrachloroethene	127-18-4	1	µg/L		----	<1	----	<1	<1
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L		----	<1	----	<1	<1
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L		----	<1	----	<1	<1
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L		----	<1	----	<1	<1
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L		----	<1	----	<1	<1
1.2.3-Trichloropropane	96-18-4	1	µg/L		----	<1	----	<1	<1
Pentachloroethane	76-01-7	1	µg/L		----	<1	----	<1	<1
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L		----	<1	----	<1	<1
Hexachlorobutadiene	87-68-3	1	µg/L		----	<1.0	----	<1.0	<1.0
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	1	µg/L		----	<1	----	<1	<1
Bromobenzene	108-86-1	1	µg/L		----	<1	----	<1	<1
2-Chlorotoluene	95-49-8	1	µg/L		----	<1	----	<1	<1
4-Chlorotoluene	106-43-4	1	µg/L		----	<1	----	<1	<1
1.3-Dichlorobenzene	541-73-1	1	µg/L		----	<1	----	<1	<1
1.4-Dichlorobenzene	106-46-7	1	µg/L		----	<1.0	----	<1.0	<1.0
1.2-Dichlorobenzene	95-50-1	1	µg/L		----	<1	----	<1	<1
1.2.4-Trichlorobenzene	120-82-1	1	µg/L		----	<1	----	<1	<1
1.2.3-Trichlorobenzene	87-61-6	1	µg/L		----	<1	----	<1	<1
EP074G: Trihalomethanes									
Chloroform	67-66-3	1	µg/L		----	<1	----	<1	<1
Bromodichloromethane	75-27-4	1	µg/L		----	<1	----	<1	<1
Dibromochloromethane	124-48-1	1	µg/L		----	<1	----	<1	<1
Bromoform	75-25-2	1	µg/L		----	<1	----	<1	<1
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L		----	<5	----	<5	<5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW01	GW03	GW04	GW05	GW06
Client sampling date / time					[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[16-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-001	EM1605749-002	EM1605749-003	EM1605749-004	EM1605749-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)anthracene	56-55-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1	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	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		30	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		130	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		720	<100	<100	280	120
C29 - C36 Fraction	----	50	µg/L		90	<50	<50	150	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		940	<50	<50	430	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		30	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		30	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		270	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		640	110	<100	380	140
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		910	110	<100	380	140
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		270	<100	<100	<100	<100
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW01	GW03	GW04	GW05	GW06
Client sampling date / time					[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[16-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-001	EM1605749-002	EM1605749-003	EM1605749-004	EM1605749-005	EM1605749-005
				Result	Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	3	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	3	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	<5
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	----	106	----	96.5	92.7	92.7
Toluene-D8	2037-26-5	1	%	----	104	----	99.1	83.7	83.7
4-Bromofluorobenzene	460-00-4	1	%	----	105	----	108	95.3	95.3
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	30.9	30.1	22.5	28.4	29.6	29.6
2-Chlorophenol-D4	93951-73-6	1	%	66.5	64.9	48.4	63.4	69.9	69.9
2,4,6-Tribromophenol	118-79-6	1	%	87.4	71.8	53.1	74.2	77.4	77.4
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	76.6	72.7	53.8	74.9	77.4	77.4
Anthracene-d10	1719-06-8	1	%	90.3	90.7	66.8	78.4	85.9	85.9
4-Terphenyl-d14	1718-51-0	1	%	98.3	93.2	67.9	76.9	83.5	83.5
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	106	107	79.0	84.5	80.8	80.8
Toluene-D8	2037-26-5	2	%	112	105	89.4	95.3	81.8	81.8
4-Bromofluorobenzene	460-00-4	2	%	110	108	91.9	92.2	89.8	89.8



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW07	GW08	GW09	GW11	GW12
Client sampling date / time				[17-May-2016]	[17-May-2016]	[17-May-2016]	[16-May-2016]	[16-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-006	EM1605749-007	EM1605749-008	EM1605749-009	EM1605749-010	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.30	7.44	7.53	7.02	6.51	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1370	1020	1160	456	1170	
ED037P: Alkalinity by PC Titrator									
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	941	408	422	244	353	
Total Alkalinity as CaCO3	----	1	mg/L	941	408	422	244	353	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	121	340	392	118	359	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	362	----	----	----	
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	123	----	386	123	389	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	167	59	87	15	142	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	237	209	186	101	228	
Magnesium	7439-95-4	1	mg/L	49	30	32	6	29	
Sodium	7440-23-5	1	mg/L	147	50	134	38	95	
Potassium	7440-09-7	1	mg/L	31	17	24	9	20	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.03	0.02	<0.01	0.02	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.015	0.003	<0.001	0.006	0.009	
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	0.002	0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002	
Nickel	7440-02-0	0.001	mg/L	0.009	0.018	0.016	0.016	0.027	
Lead	7439-92-1	0.001	mg/L	0.003	<0.001	<0.001	<0.001	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.014	<0.005	<0.005	0.012	0.021	
Manganese	7439-96-5	0.001	mg/L	0.137	0.196	0.318	0.077	0.060	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	8.19	1.35	14.6	1.08	1.20	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW07	GW08	GW09	GW11	GW12
Client sampling date / time				[17-May-2016]	[17-May-2016]	[17-May-2016]	[16-May-2016]	[16-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-006	EM1605749-007	EM1605749-008	EM1605749-009	EM1605749-010	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.4	0.4	0.3	0.3	0.2	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	26.8	3.39	6.03	0.82	0.15	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.02	<0.01	<0.01	0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.37	0.14	<0.01	0.03	0.04	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	0.04	<0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	26.0	16.9	19.0	7.76	18.5	
Total Cations	----	0.01	meq/L	----	----	----	----	----	
Total Cations	----	0.01	meq/L	23.0	15.5	18.4	7.42	18.4	
Ionic Balance	----	0.01	%	----	----	----	----	----	
Ionic Balance	----	0.01	%	6.07	4.25	1.83	2.20	0.31	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----	
Toluene	108-88-3	1	µg/L	<1	<1	<1	<1	----	
Ethylbenzene	100-41-4	1	µg/L	<1	<1	<1	<1	----	
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	<1	<1	<1	----	
Styrene	100-42-5	1	µg/L	<1	<1	<1	<1	----	
ortho-Xylene	95-47-6	1	µg/L	<1	<1	<1	<1	----	
Isopropylbenzene	98-82-8	1	µg/L	<1	<1	<1	<1	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW07	GW08	GW09	GW11	GW12
Client sampling date / time					[17-May-2016]	[17-May-2016]	[17-May-2016]	[16-May-2016]	[16-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-006	EM1605749-007	EM1605749-008	EM1605749-009	EM1605749-009	EM1605749-010
				Result	Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Propylbenzene	103-65-1	1	µg/L	<1	<1	<1	<1	<1	----
1.3.5-Trimethylbenzene	108-67-8	1	µg/L	<1	<1	<1	<1	<1	----
sec-Butylbenzene	135-98-8	1	µg/L	<1	<1	<1	<1	<1	----
1.2.4-Trimethylbenzene	95-63-6	1	µg/L	<1	<1	<1	<1	<1	----
tert-Butylbenzene	98-06-6	1	µg/L	<1	<1	<1	<1	<1	----
p-Isopropyltoluene	99-87-6	1	µg/L	<1	<1	<1	<1	<1	----
n-Butylbenzene	104-51-8	1	µg/L	<1	<1	<1	<1	<1	----
EP074B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	10	µg/L	<10	<10	<10	<10	<10	----
Vinyl Acetate	108-05-4	10	µg/L	<10	<10	<10	<10	<10	----
2-Butanone (MEK)	78-93-3	10	µg/L	<10	<10	<10	<10	<10	----
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	<10	<10	<10	<10	----
2-Hexanone (MBK)	591-78-6	10	µg/L	<10	<10	<10	<10	<10	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L	<1	<1	<1	<1	<1	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L	<1	<1	<1	<1	<1	----
1.2-Dichloropropane	78-87-5	1	µg/L	<1	<1	<1	<1	<1	----
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L	<2	<2	<2	<2	<2	----
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L	<2	<2	<2	<2	<2	----
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	<1	<1	<1	<1	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L	<10	<10	<10	<10	<10	----
Chloromethane	74-87-3	10	µg/L	<10	<10	<10	<10	<10	----
Vinyl chloride	75-01-4	10	µg/L	<10.0	<10.0	<10.0	<10.0	<10.0	----
Bromomethane	74-83-9	10	µg/L	<10	<10	<10	<10	<10	----
Chloroethane	75-00-3	10	µg/L	<10	<10	<10	<10	<10	----
Trichlorofluoromethane	75-69-4	10	µg/L	<10	<10	<10	<10	<10	----
1.1-Dichloroethene	75-35-4	1	µg/L	<1	<1	<1	<1	<1	----
Iodomethane	74-88-4	1	µg/L	<1	<1	<1	<1	<1	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	<5	<5	<5	----
trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	<1	<1	<1	<1	----
1.1-Dichloroethane	75-34-3	1	µg/L	<1	<1	<1	<1	<1	----
cis-1.2-Dichloroethene	156-59-2	1	µg/L	10	<1	<1	<1	11	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW07	GW08	GW09	GW11	GW12
Client sampling date / time					[17-May-2016]	[17-May-2016]	[17-May-2016]	[16-May-2016]	[16-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-006	EM1605749-007	EM1605749-008	EM1605749-009	EM1605749-010
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)anthracene	56-55-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1	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	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
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		120	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		120	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	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		110	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		110	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW07	GW08	GW09	GW11	GW12
Client sampling date / time					[17-May-2016]	[17-May-2016]	[17-May-2016]	[16-May-2016]	[16-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-006	EM1605749-007	EM1605749-008	EM1605749-009	EM1605749-010
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
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
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
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%		97.8	99.8	95.7	93.8	----
Toluene-D8	2037-26-5	1	%		98.8	102	96.1	92.2	----
4-Bromofluorobenzene	460-00-4	1	%		99.5	110	100	97.4	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%		32.6	30.5	30.7	26.5	30.5
2-Chlorophenol-D4	93951-73-6	1	%		76.8	67.8	68.7	64.1	73.9
2,4,6-Tribromophenol	118-79-6	1	%		85.6	65.5	70.2	68.9	69.8
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%		84.7	73.2	77.8	68.9	82.1
Anthracene-d10	1719-06-8	1	%		89.6	78.4	84.0	79.4	86.6
4-Terphenyl-d14	1718-51-0	1	%		87.3	75.2	82.6	76.8	84.3
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		85.6	87.1	83.7	82.3	88.5
Toluene-D8	2037-26-5	2	%		96.4	98.8	93.1	88.9	94.9
4-Bromofluorobenzene	460-00-4	2	%		94.3	96.6	94.4	91.3	92.7



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW14	GW15	GW16	GW17	GW18
Client sampling date / time				[17-May-2016]	[18-May-2016]	[17-May-2016]	[17-May-2016]	[18-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-011	EM1605749-012	EM1605749-013	EM1605749-014	EM1605749-015	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.83	7.28	7.02	6.94	7.32	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	331	24200	706	849	22900	
ED037P: Alkalinity by PC Titrator									
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	96	3130	263	374	2930	
Total Alkalinity as CaCO3	----	1	mg/L	96	3130	263	374	2930	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	6	362	69	234	484	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	----	----	
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	13	378	88	230	473	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	11	12300	26	78	11700	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	25	387	66	121	371	
Magnesium	7439-95-4	1	mg/L	4	1170	17	28	972	
Sodium	7440-23-5	1	mg/L	13	7500	47	133	7260	
Potassium	7440-09-7	1	mg/L	4	222	20	13	190	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.04	0.01	0.02	0.03	
Arsenic	7440-38-2	0.001	mg/L	0.004	0.058	0.025	0.001	0.010	
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	0.013	0.002	0.002	0.012	
Copper	7440-50-8	0.001	mg/L	0.001	0.002	<0.001	<0.001	<0.001	
Nickel	7440-02-0	0.001	mg/L	0.021	0.023	0.016	0.013	0.005	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.002	<0.001	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.017	0.015	0.026	<0.005	<0.005	
Manganese	7439-96-5	0.001	mg/L	0.001	0.194	0.079	0.287	0.075	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	<0.05	0.16	3.08	1.70	0.07	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW14	GW15	GW16	GW17	GW18
Client sampling date / time				[17-May-2016]	[18-May-2016]	[17-May-2016]	[17-May-2016]	[18-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-011	EM1605749-012	EM1605749-013	EM1605749-014	EM1605749-015	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.7	0.6	0.7	0.6	0.8	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	26.4	0.20	0.94	36.6	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.02	2.90	0.02	0.05	0.04	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.17	4.28	0.03	0.09	4.08	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	2.35	417	7.42	14.5	399	
Total Cations	----	0.01	meq/L	----	----	----	----	----	
Total Cations	----	0.01	meq/L	2.24	448	7.25	14.5	419	
Ionic Balance	----	0.01	%	----	----	----	----	----	
Ionic Balance	----	0.01	%	2.35	3.51	1.19	0.29	2.49	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	----	<1	----	<1	----	
Toluene	108-88-3	1	µg/L	----	<1	----	<1	----	
Ethylbenzene	100-41-4	1	µg/L	----	<1	----	<1	----	
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	----	<1	----	<1	----	
Styrene	100-42-5	1	µg/L	----	<1	----	<1	----	
ortho-Xylene	95-47-6	1	µg/L	----	<1	----	<1	----	
Isopropylbenzene	98-82-8	1	µg/L	----	<1	----	<1	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW14	GW15	GW16	GW17	GW18
Client sampling date / time					[17-May-2016]	[18-May-2016]	[17-May-2016]	[17-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-011	EM1605749-012	EM1605749-013	EM1605749-014	EM1605749-015
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Propylbenzene	103-65-1	1	µg/L	----	<1	----	----	<1	----
1.3.5-Trimethylbenzene	108-67-8	1	µg/L	----	<1	----	----	<1	----
sec-Butylbenzene	135-98-8	1	µg/L	----	<1	----	----	<1	----
1.2.4-Trimethylbenzene	95-63-6	1	µg/L	----	<1	----	----	<1	----
tert-Butylbenzene	98-06-6	1	µg/L	----	<1	----	----	<1	----
p-Isopropyltoluene	99-87-6	1	µg/L	----	<1	----	----	<1	----
n-Butylbenzene	104-51-8	1	µg/L	----	<1	----	----	<1	----
EP074B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	10	µg/L	----	20	----	----	<10	----
Vinyl Acetate	108-05-4	10	µg/L	----	<10	----	----	<10	----
2-Butanone (MEK)	78-93-3	10	µg/L	----	<10	----	----	<10	----
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	----	<10	----	----	<10	----
2-Hexanone (MBK)	591-78-6	10	µg/L	----	<10	----	----	<10	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L	----	4	----	----	<1	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L	----	<1	----	----	<1	----
1.2-Dichloropropane	78-87-5	1	µg/L	----	<1	----	----	<1	----
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L	----	<2	----	----	<2	----
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L	----	<2	----	----	<2	----
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L	----	<1	----	----	<1	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L	----	<10	----	----	<10	----
Chloromethane	74-87-3	10	µg/L	----	<10	----	----	<10	----
Vinyl chloride	75-01-4	10	µg/L	----	<10.0	----	----	<10.0	----
Bromomethane	74-83-9	10	µg/L	----	<10	----	----	<10	----
Chloroethane	75-00-3	10	µg/L	----	<10	----	----	<10	----
Trichlorofluoromethane	75-69-4	10	µg/L	----	<10	----	----	<10	----
1.1-Dichloroethene	75-35-4	1	µg/L	----	<1	----	----	<1	----
Iodomethane	74-88-4	1	µg/L	----	<1	----	----	<1	----
Methylene chloride	75-09-2	5	µg/L	----	<5	----	----	<5	----
trans-1.2-Dichloroethene	156-60-5	1	µg/L	----	<1	----	----	<1	----
1.1-Dichloroethane	75-34-3	1	µg/L	----	<1	----	----	<1	----
cis-1.2-Dichloroethene	156-59-2	1	µg/L	----	<1	----	----	<1	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW14	GW15	GW16	GW17	GW18
Client sampling date / time					[17-May-2016]	[18-May-2016]	[17-May-2016]	[17-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-011	EM1605749-012	EM1605749-013	EM1605749-014	EM1605749-015
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.1-Trichloroethane	71-55-6	1	µg/L		----	<1	----	<1	----
1.1-Dichloropropylene	563-58-6	1	µg/L		----	<1	----	<1	----
Carbon Tetrachloride	56-23-5	1	µg/L		----	<1	----	<1	----
1.2-Dichloroethane	107-06-2	1	µg/L		----	<1	----	<1	----
Trichloroethene	79-01-6	1	µg/L		----	<1	----	<1	----
Dibromomethane	74-95-3	1	µg/L		----	<1	----	<1	----
1.1.2-Trichloroethane	79-00-5	1	µg/L		----	<1	----	<1	----
1.3-Dichloropropane	142-28-9	1	µg/L		----	<1	----	<1	----
Tetrachloroethene	127-18-4	1	µg/L		----	<1	----	<1	----
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L		----	<1	----	<1	----
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L		----	<1	----	<1	----
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L		----	<1	----	<1	----
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L		----	<1	----	<1	----
1.2.3-Trichloropropane	96-18-4	1	µg/L		----	<1	----	<1	----
Pentachloroethane	76-01-7	1	µg/L		----	<1	----	<1	----
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L		----	<1	----	<1	----
Hexachlorobutadiene	87-68-3	1	µg/L		----	<1.0	----	<1.0	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	1	µg/L		----	<1	----	<1	----
Bromobenzene	108-86-1	1	µg/L		----	<1	----	<1	----
2-Chlorotoluene	95-49-8	1	µg/L		----	<1	----	<1	----
4-Chlorotoluene	106-43-4	1	µg/L		----	<1	----	<1	----
1.3-Dichlorobenzene	541-73-1	1	µg/L		----	<1	----	<1	----
1.4-Dichlorobenzene	106-46-7	1	µg/L		----	<1.0	----	<1.0	----
1.2-Dichlorobenzene	95-50-1	1	µg/L		----	<1	----	<1	----
1.2.4-Trichlorobenzene	120-82-1	1	µg/L		----	<1	----	<1	----
1.2.3-Trichlorobenzene	87-61-6	1	µg/L		----	<1	----	<1	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	1	µg/L		----	<1	----	<1	----
Bromodichloromethane	75-27-4	1	µg/L		----	<1	----	<1	----
Dibromochloromethane	124-48-1	1	µg/L		----	<1	----	<1	----
Bromoform	75-25-2	1	µg/L		----	<1	----	<1	----
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L		----	<5	----	<5	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW14	GW15	GW16	GW17	GW18
Client sampling date / time					[17-May-2016]	[18-May-2016]	[17-May-2016]	[17-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-011	EM1605749-012	EM1605749-013	EM1605749-014	EM1605749-015
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)anthracene	56-55-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1	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	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
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		<100	320	<100	<100	200
C29 - C36 Fraction	----	50	µg/L		<50	90	<50	<50	50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	460	<50	<50	250
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	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		<100	350	<100	<100	220
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	350	<100	<100	220
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW14	GW15	GW16	GW17	GW18
Client sampling date / time					[17-May-2016]	[18-May-2016]	[17-May-2016]	[17-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-011	EM1605749-012	EM1605749-013	EM1605749-014	EM1605749-015
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
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
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
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%		----	105	----	98.0	----
Toluene-D8	2037-26-5	1	%		----	98.7	----	95.8	----
4-Bromofluorobenzene	460-00-4	1	%		----	99.4	----	106	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%		29.6	26.1	23.1	24.0	28.8
2-Chlorophenol-D4	93951-73-6	1	%		72.6	55.7	61.5	63.6	61.8
2,4,6-Tribromophenol	118-79-6	1	%		73.8	80.2	60.4	67.0	83.5
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%		82.0	64.4	71.6	71.5	64.6
Anthracene-d10	1719-06-8	1	%		87.6	73.9	73.8	76.9	81.6
4-Terphenyl-d14	1718-51-0	1	%		85.7	71.3	70.6	72.0	77.1
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		83.3	91.6	88.6	85.6	93.5
Toluene-D8	2037-26-5	2	%		91.9	95.6	94.5	92.0	92.2
4-Bromofluorobenzene	460-00-4	2	%		93.8	93.2	94.4	92.5	90.9



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW19	GW20	GW21	GW22	GW24
Client sampling date / time				[18-May-2016]	[17-May-2016]	[17-May-2016]	[18-May-2016]	[18-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-016	EM1605749-017	EM1605749-018	EM1605749-019	EM1605749-020	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.15	7.68	6.34	5.93	7.05	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	20600	2220	875	942	1800	
ED037P: Alkalinity by PC Titrator									
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	2440	720	261	117	825	
Total Alkalinity as CaCO3	----	1	mg/L	2440	720	261	117	825	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	530	640	299	303	<1	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	----	----	
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	1770	646	328	328	10	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	10400	124	34	131	721	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	338	308	125	73	130	
Magnesium	7439-95-4	1	mg/L	962	66	25	35	74	
Sodium	7440-23-5	1	mg/L	5940	218	93	118	478	
Potassium	7440-09-7	1	mg/L	190	24	7	15	39	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.05	0.01	0.02	0.29	0.02	
Arsenic	7440-38-2	0.001	mg/L	0.002	0.004	0.004	0.004	0.012	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.010	<0.001	0.002	0.006	0.003	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	0.002	<0.001	
Nickel	7440-02-0	0.001	mg/L	0.053	0.008	0.029	0.028	0.016	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.005	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.006	0.092	0.014	0.120	0.005	
Manganese	7439-96-5	0.001	mg/L	0.341	0.229	0.216	0.217	0.612	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	8.22	6.14	14.7	7.03	21.2	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW19	GW20	GW21	GW22	GW24
Client sampling date / time				[18-May-2016]	[17-May-2016]	[17-May-2016]	[18-May-2016]	[18-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-016	EM1605749-017	EM1605749-018	EM1605749-019	EM1605749-020	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.5	0.9	0.6	0.4	0.9	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	26.8	6.16	0.62	1.27	7.09	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.03	<0.01	0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.08	0.02	0.01	0.09	0.03	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	1.70	0.05	<0.01	<0.01	<0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	353	31.2	12.4	12.3	36.8	
Total Cations	----	0.01	meq/L	----	----	----	----	----	
Total Cations	----	0.01	meq/L	359	30.9	12.5	12.0	34.4	
Ionic Balance	----	0.01	%	----	----	----	----	----	
Ionic Balance	----	0.01	%	0.84	0.49	0.49	1.24	3.46	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	<1	<1	----	<1	----	
Toluene	108-88-3	1	µg/L	<1	<1	----	<1	----	
Ethylbenzene	100-41-4	1	µg/L	<1	<1	----	<1	----	
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	<1	----	<1	----	
Styrene	100-42-5	1	µg/L	<1	<1	----	<1	----	
ortho-Xylene	95-47-6	1	µg/L	<1	<1	----	<1	----	
Isopropylbenzene	98-82-8	1	µg/L	<1	<1	----	<1	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW19	GW20	GW21	GW22	GW24
Client sampling date / time					[18-May-2016]	[17-May-2016]	[17-May-2016]	[18-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-016	EM1605749-017	EM1605749-018	EM1605749-018	EM1605749-019	EM1605749-020
				Result	Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Propylbenzene	103-65-1	1	µg/L	<1	<1	----	----	<1	----
1.3.5-Trimethylbenzene	108-67-8	1	µg/L	<1	<1	----	----	<1	----
sec-Butylbenzene	135-98-8	1	µg/L	<1	<1	----	----	<1	----
1.2.4-Trimethylbenzene	95-63-6	1	µg/L	<1	<1	----	----	<1	----
tert-Butylbenzene	98-06-6	1	µg/L	<1	<1	----	----	<1	----
p-Isopropyltoluene	99-87-6	1	µg/L	<1	<1	----	----	<1	----
n-Butylbenzene	104-51-8	1	µg/L	<1	<1	----	----	<1	----
EP074B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	10	µg/L	20	<10	----	----	<10	----
Vinyl Acetate	108-05-4	10	µg/L	<10	<10	----	----	<10	----
2-Butanone (MEK)	78-93-3	10	µg/L	<10	<10	----	----	<10	----
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	<10	----	----	<10	----
2-Hexanone (MBK)	591-78-6	10	µg/L	<10	<10	----	----	<10	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L	3	<1	----	----	<1	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L	<1	<1	----	----	<1	----
1.2-Dichloropropane	78-87-5	1	µg/L	<1	<1	----	----	<1	----
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L	<2	<2	----	----	<2	----
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L	<2	<2	----	----	<2	----
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	<1	----	----	<1	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L	<10	<10	----	----	<10	----
Chloromethane	74-87-3	10	µg/L	<10	<10	----	----	<10	----
Vinyl chloride	75-01-4	10	µg/L	<10.0	<10.0	----	----	<10.0	----
Bromomethane	74-83-9	10	µg/L	<10	<10	----	----	<10	----
Chloroethane	75-00-3	10	µg/L	<10	<10	----	----	<10	----
Trichlorofluoromethane	75-69-4	10	µg/L	<10	<10	----	----	<10	----
1.1-Dichloroethene	75-35-4	1	µg/L	<1	<1	----	----	<1	----
Iodomethane	74-88-4	1	µg/L	<1	<1	----	----	<1	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	<5	----
trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	<1	----	----	<1	----
1.1-Dichloroethane	75-34-3	1	µg/L	<1	<1	----	----	<1	----
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	<1	----	----	<1	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW19	GW20	GW21	GW22	GW24
Client sampling date / time					[18-May-2016]	[17-May-2016]	[17-May-2016]	[18-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-016	EM1605749-017	EM1605749-018	EM1605749-019	EM1605749-020
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.1-Trichloroethane	71-55-6	1	µg/L		<1	<1	----	<1	----
1.1-Dichloropropylene	563-58-6	1	µg/L		<1	<1	----	<1	----
Carbon Tetrachloride	56-23-5	1	µg/L		<1	<1	----	<1	----
1.2-Dichloroethane	107-06-2	1	µg/L		<1	<1	----	<1	----
Trichloroethene	79-01-6	1	µg/L		<1	<1	----	<1	----
Dibromomethane	74-95-3	1	µg/L		<1	<1	----	<1	----
1.1.2-Trichloroethane	79-00-5	1	µg/L		<1	<1	----	<1	----
1.3-Dichloropropane	142-28-9	1	µg/L		<1	<1	----	<1	----
Tetrachloroethene	127-18-4	1	µg/L		<1	<1	----	<1	----
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L		<1	<1	----	<1	----
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L		<1	<1	----	<1	----
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L		<1	<1	----	<1	----
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L		<1	<1	----	<1	----
1.2.3-Trichloropropane	96-18-4	1	µg/L		<1	<1	----	<1	----
Pentachloroethane	76-01-7	1	µg/L		<1	<1	----	<1	----
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L		<1	<1	----	<1	----
Hexachlorobutadiene	87-68-3	1	µg/L		<1.0	<1.0	----	<1.0	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	1	µg/L		<1	<1	----	<1	----
Bromobenzene	108-86-1	1	µg/L		<1	<1	----	<1	----
2-Chlorotoluene	95-49-8	1	µg/L		<1	<1	----	<1	----
4-Chlorotoluene	106-43-4	1	µg/L		<1	<1	----	<1	----
1.3-Dichlorobenzene	541-73-1	1	µg/L		<1	<1	----	<1	----
1.4-Dichlorobenzene	106-46-7	1	µg/L		<1.0	<1.0	----	<1.0	----
1.2-Dichlorobenzene	95-50-1	1	µg/L		<1	<1	----	<1	----
1.2.4-Trichlorobenzene	120-82-1	1	µg/L		<1	<1	----	<1	----
1.2.3-Trichlorobenzene	87-61-6	1	µg/L		<1	<1	----	<1	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	1	µg/L		<1	<1	----	<1	----
Bromodichloromethane	75-27-4	1	µg/L		<1	<1	----	<1	----
Dibromochloromethane	124-48-1	1	µg/L		<1	<1	----	<1	----
Bromoform	75-25-2	1	µg/L		<1	<1	----	<1	----
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L		<5	<5	----	<5	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW19	GW20	GW21	GW22	GW24
Client sampling date / time					[18-May-2016]	[17-May-2016]	[17-May-2016]	[18-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-016	EM1605749-017	EM1605749-018	EM1605749-019	EM1605749-020	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	1.3	
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzo(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Chrysene	218-01-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzo(k)fluoranthene	207-08-9	1	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	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzo(g,h,i)perylene	191-24-2	1	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	1.3	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	270	
C15 - C28 Fraction	----	100	µg/L	230	<100	160	<100	240	
C29 - C36 Fraction	----	50	µg/L	90	<50	<50	<50	50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	320	<50	160	<50	560	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	30	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	30	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	270	
>C16 - C34 Fraction	----	100	µg/L	280	<100	160	<100	220	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	280	<100	160	<100	490	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	270	
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW19	GW20	GW21	GW22	GW24
Client sampling date / time					[18-May-2016]	[17-May-2016]	[17-May-2016]	[18-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-016	EM1605749-017	EM1605749-018	EM1605749-019	EM1605749-020
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
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
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	3
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	3
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	3
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%		106	97.3	----	107	----
Toluene-D8	2037-26-5	1	%		97.2	78.9	----	102	----
4-Bromofluorobenzene	460-00-4	1	%		86.8	89.0	----	98.7	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%		33.4	23.1	27.6	17.5	26.3
2-Chlorophenol-D4	93951-73-6	1	%		72.4	58.2	65.4	25.5	61.5
2,4,6-Tribromophenol	118-79-6	1	%		89.6	70.6	72.9	72.7	74.6
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%		78.7	63.9	71.1	50.3	72.6
Anthracene-d10	1719-06-8	1	%		83.1	78.6	76.5	79.4	70.8
4-Terphenyl-d14	1718-51-0	1	%		79.4	76.1	70.4	82.7	68.5
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		105	97.3	101	107	107
Toluene-D8	2037-26-5	2	%		97.6	79.1	96.2	104	97.9
4-Bromofluorobenzene	460-00-4	2	%		88.8	90.4	95.5	99.2	97.7



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW25	GW26	GW28	GW30	GW31
Client sampling date / time				[16-May-2016]	[16-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-021	EM1605749-022	EM1605749-023	EM1605749-024	EM1605749-025	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.51	6.66	7.82	2.98	6.79	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2230	1330	2120	1760	7510	
ED037P: Alkalinity by PC Titrator									
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	616	95	1160	<1	373	
Total Alkalinity as CaCO3	----	1	mg/L	616	95	1160	<1	373	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	992	766	419	989	1420	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	----	----	
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	1030	876	447	1110	1540	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	72	13	225	29	2990	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	293	333	75	179	797	
Magnesium	7439-95-4	1	mg/L	144	21	46	34	384	
Sodium	7440-23-5	1	mg/L	192	27	674	59	1110	
Potassium	7440-09-7	1	mg/L	36	8	29	9	99	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.01	0.01	<0.01	12.5	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	0.002	0.010	0.007	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001	0.0016	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	0.002	0.059	0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	0.006	<0.001	
Nickel	7440-02-0	0.001	mg/L	0.017	0.056	0.026	0.541	0.038	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.006	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.007	1.21	<0.005	0.349	0.013	
Manganese	7439-96-5	0.001	mg/L	0.708	0.279	0.206	0.647	0.464	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	13.5	0.92	1.52	110	56.6	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW25	GW26	GW28	GW30	GW31
Client sampling date / time				[16-May-2016]	[16-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-021	EM1605749-022	EM1605749-023	EM1605749-024	EM1605749-025	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.5	0.3	1.8	0.1	0.4	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	4.41	0.10	7.39	1.00	5.68	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	0.22	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.02	0.11	0.01	<0.01	0.03	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.59	0.04	<0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	35.0	18.2	38.2	21.4	121	
Total Cations	----	0.01	meq/L	----	----	----	21.8	----	
Total Cations	----	0.01	meq/L	35.7	19.7	37.6	----	122	
Ionic Balance	----	0.01	%	----	----	----	0.96	----	
Ionic Balance	----	0.01	%	1.07	4.03	0.91	----	0.36	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	<1	<1	----	<1	<1	
Toluene	108-88-3	1	µg/L	<1	<1	----	<1	<1	
Ethylbenzene	100-41-4	1	µg/L	<1	<1	----	<1	<1	
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	<1	----	<1	<1	
Styrene	100-42-5	1	µg/L	<1	<1	----	<1	<1	
ortho-Xylene	95-47-6	1	µg/L	<1	<1	----	<1	<1	
Isopropylbenzene	98-82-8	1	µg/L	<1	<1	----	<1	<1	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW25	GW26	GW28	GW30	GW31
Client sampling date / time					[16-May-2016]	[16-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-021	EM1605749-022	EM1605749-023	EM1605749-024	EM1605749-025	EM1605749-025
				Result	Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Propylbenzene	103-65-1	1	µg/L	<1	<1	----	<1	<1	<1
1.3.5-Trimethylbenzene	108-67-8	1	µg/L	<1	<1	----	<1	<1	<1
sec-Butylbenzene	135-98-8	1	µg/L	<1	<1	----	<1	<1	<1
1.2.4-Trimethylbenzene	95-63-6	1	µg/L	<1	<1	----	<1	<1	<1
tert-Butylbenzene	98-06-6	1	µg/L	<1	<1	----	<1	<1	<1
p-Isopropyltoluene	99-87-6	1	µg/L	<1	<1	----	<1	<1	<1
n-Butylbenzene	104-51-8	1	µg/L	<1	<1	----	<1	<1	<1
EP074B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	10	µg/L	<10	<10	----	<10	<10	<10
Vinyl Acetate	108-05-4	10	µg/L	<10	<10	----	<10	<10	<10
2-Butanone (MEK)	78-93-3	10	µg/L	<10	<10	----	<10	<10	<10
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	<10	----	<10	<10	<10
2-Hexanone (MBK)	591-78-6	10	µg/L	<10	<10	----	<10	<10	<10
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L	<1	<1	----	<1	<1	<1
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L	<1	<1	----	<1	<1	<1
1.2-Dichloropropane	78-87-5	1	µg/L	<1	<1	----	<1	<1	<1
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L	<2	<2	----	<2	<2	<2
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L	<2	<2	----	<2	<2	<2
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	<1	----	<1	<1	<1
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L	<10	<10	----	<10	<10	<10
Chloromethane	74-87-3	10	µg/L	<10	<10	----	<10	<10	<10
Vinyl chloride	75-01-4	10	µg/L	<10.0	<10.0	----	<10.0	<10.0	<10.0
Bromomethane	74-83-9	10	µg/L	<10	<10	----	<10	<10	<10
Chloroethane	75-00-3	10	µg/L	<10	<10	----	<10	<10	<10
Trichlorofluoromethane	75-69-4	10	µg/L	<10	<10	----	<10	<10	<10
1.1-Dichloroethene	75-35-4	1	µg/L	<1	<1	----	<1	<1	<1
Iodomethane	74-88-4	1	µg/L	<1	<1	----	<1	<1	<1
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	<5	<5	<5
trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	<1	----	<1	<1	<1
1.1-Dichloroethane	75-34-3	1	µg/L	<1	<1	----	<1	<1	<1
cis-1.2-Dichloroethene	156-59-2	1	µg/L	24	<1	----	<1	<1	<1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW25	GW26	GW28	GW30	GW31
Client sampling date / time				[16-May-2016]	[16-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-021	EM1605749-022	EM1605749-023	EM1605749-024	EM1605749-025	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.1-Trichloroethane	71-55-6	1	µg/L	<1	<1	----	<1	<1	
1.1-Dichloropropylene	563-58-6	1	µg/L	<1	<1	----	<1	<1	
Carbon Tetrachloride	56-23-5	1	µg/L	<1	<1	----	<1	<1	
1.2-Dichloroethane	107-06-2	1	µg/L	<1	<1	----	<1	<1	
Trichloroethene	79-01-6	1	µg/L	<1	<1	----	<1	<1	
Dibromomethane	74-95-3	1	µg/L	<1	<1	----	<1	<1	
1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	<1	----	<1	<1	
1.3-Dichloropropane	142-28-9	1	µg/L	<1	<1	----	<1	<1	
Tetrachloroethene	127-18-4	1	µg/L	<1	<1	----	<1	<1	
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	<1	----	<1	<1	
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	<1	----	<1	<1	
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	<1	----	<1	<1	
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	<1	----	<1	<1	
1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	<1	----	<1	<1	
Pentachloroethane	76-01-7	1	µg/L	<1	<1	----	<1	<1	
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	<1	----	<1	<1	
Hexachlorobutadiene	87-68-3	1	µg/L	<1.0	<1.0	----	<1.0	<1.0	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	1	µg/L	<1	<1	----	<1	<1	
Bromobenzene	108-86-1	1	µg/L	<1	<1	----	<1	<1	
2-Chlorotoluene	95-49-8	1	µg/L	<1	<1	----	<1	<1	
4-Chlorotoluene	106-43-4	1	µg/L	<1	<1	----	<1	<1	
1.3-Dichlorobenzene	541-73-1	1	µg/L	<1	<1	----	<1	<1	
1.4-Dichlorobenzene	106-46-7	1	µg/L	<1.0	<1.0	----	<1.0	<1.0	
1.2-Dichlorobenzene	95-50-1	1	µg/L	<1	<1	----	<1	<1	
1.2.4-Trichlorobenzene	120-82-1	1	µg/L	<1	<1	----	<1	<1	
1.2.3-Trichlorobenzene	87-61-6	1	µg/L	<1	<1	----	<1	<1	
EP074G: Trihalomethanes									
Chloroform	67-66-3	1	µg/L	<1	<1	----	<1	<1	
Bromodichloromethane	75-27-4	1	µg/L	<1	<1	----	<1	<1	
Dibromochloromethane	124-48-1	1	µg/L	<1	<1	----	<1	<1	
Bromoform	75-25-2	1	µg/L	<1	<1	----	<1	<1	
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L	<5	<5	----	<5	<5	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW25	GW26	GW28	GW30	GW31
Client sampling date / time					[16-May-2016]	[16-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-021	EM1605749-022	EM1605749-023	EM1605749-024	EM1605749-025	EM1605749-025
				Result	Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<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	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<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	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	<100
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW25	GW26	GW28	GW30	GW31
Client sampling date / time				[16-May-2016]	[16-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-021	EM1605749-022	EM1605749-023	EM1605749-024	EM1605749-025	
				Result	Result	Result	Result	Result	
EP080: BTEXN - Continued									
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	
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	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	111	108	----	104	117	
Toluene-D8	2037-26-5	1	%	97.5	100	----	81.4	100	
4-Bromofluorobenzene	460-00-4	1	%	98.0	96.2	----	86.5	97.1	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	26.7	26.4	26.8	22.4	26.0	
2-Chlorophenol-D4	93951-73-6	1	%	54.7	56.4	62.1	54.4	59.7	
2,4,6-Tribromophenol	118-79-6	1	%	63.0	54.0	68.8	62.7	61.7	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	66.7	59.8	72.6	60.7	68.8	
Anthracene-d10	1719-06-8	1	%	77.8	70.2	85.1	76.5	79.3	
4-Terphenyl-d14	1718-51-0	1	%	81.0	72.2	90.2	82.3	80.9	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	110	108	85.4	103	117	
Toluene-D8	2037-26-5	2	%	98.7	102	90.8	81.6	101	
4-Bromofluorobenzene	460-00-4	2	%	99.9	99.1	100	87.1	98.7	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW32	GW33	GW34	GW35	GW36
Client sampling date / time				[18-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-026	EM1605749-027	EM1605749-028	EM1605749-029	EM1605749-030	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.26	7.46	7.41	7.06	7.32	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	9780	1050	2220	3540	1190	
ED037P: Alkalinity by PC Titrator									
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	597	720	560	446	351	
Total Alkalinity as CaCO3	----	1	mg/L	597	720	560	446	351	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1280	7	162	1890	129	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	----	----	
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	1490	8	223	2200	151	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	4460	136	814	142	289	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	836	139	87	491	91	
Magnesium	7439-95-4	1	mg/L	313	70	90	203	47	
Sodium	7440-23-5	1	mg/L	2090	63	551	332	172	
Potassium	7440-09-7	1	mg/L	51	24	44	41	24	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.03	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.014	0.002	0.007	0.004	
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	0.002	0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Nickel	7440-02-0	0.001	mg/L	<0.001	0.013	0.009	0.027	0.018	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.006	<0.005	<0.005	0.006	0.037	
Manganese	7439-96-5	0.001	mg/L	3.34	0.286	0.109	1.39	0.641	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	0.31	16.9	0.52	16.8	11.2	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW32	GW33	GW34	GW35	GW36
Client sampling date / time				[18-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-026	EM1605749-027	EM1605749-028	EM1605749-029	EM1605749-030	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.8	0.2	0.6	0.3	1.1	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	11.0	6.81	7.79	7.49	3.45	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	0.04	0.08	0.03	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.20	<0.01	0.85	<0.01	0.03	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	164	18.4	37.5	52.3	17.8	
Total Cations	----	0.01	meq/L	----	----	----	----	----	
Total Cations	----	0.01	meq/L	160	16.0	36.8	56.7	16.5	
Ionic Balance	----	0.01	%	----	----	----	----	----	
Ionic Balance	----	0.01	%	1.44	6.72	0.93	4.07	3.92	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	162	<1	<1	<1	----	
Toluene	108-88-3	1	µg/L	4	<1	<1	<1	----	
Ethylbenzene	100-41-4	1	µg/L	276	<1	<1	<1	----	
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	24	<1	<1	<1	----	
Styrene	100-42-5	1	µg/L	<1	<1	<1	<1	----	
ortho-Xylene	95-47-6	1	µg/L	6	<1	<1	<1	----	
Isopropylbenzene	98-82-8	1	µg/L	17	<1	<1	<1	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW32	GW33	GW34	GW35	GW36
Client sampling date / time				[18-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-026	EM1605749-027	EM1605749-028	EM1605749-029	EM1605749-030	
				Result	Result	Result	Result	Result	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Propylbenzene	103-65-1	1	µg/L	6	<1	<1	<1	----	
1.3.5-Trimethylbenzene	108-67-8	1	µg/L	1	<1	<1	<1	----	
sec-Butylbenzene	135-98-8	1	µg/L	<1	<1	<1	<1	----	
1.2.4-Trimethylbenzene	95-63-6	1	µg/L	9	<1	<1	<1	----	
tert-Butylbenzene	98-06-6	1	µg/L	<1	<1	<1	<1	----	
p-Isopropyltoluene	99-87-6	1	µg/L	<1	<1	<1	<1	----	
n-Butylbenzene	104-51-8	1	µg/L	1	<1	<1	<1	----	
EP074B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	10	µg/L	<10	<10	<10	<10	----	
Vinyl Acetate	108-05-4	10	µg/L	<10	<10	<10	<10	----	
2-Butanone (MEK)	78-93-3	10	µg/L	<10	<10	<10	<10	----	
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	<10	<10	<10	----	
2-Hexanone (MBK)	591-78-6	10	µg/L	<10	<10	<10	<10	----	
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L	3	<1	1	<1	----	
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L	<1	<1	<1	<1	----	
1.2-Dichloropropane	78-87-5	1	µg/L	<1	<1	<1	<1	----	
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L	<2	<2	<2	<2	----	
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L	<2	<2	<2	<2	----	
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	<1	<1	<1	----	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L	<10	<10	<10	<10	----	
Chloromethane	74-87-3	10	µg/L	<10	<10	<10	<10	----	
Vinyl chloride	75-01-4	10	µg/L	<10.0	<10.0	<10.0	<10.0	----	
Bromomethane	74-83-9	10	µg/L	<20	<10	<10	<10	----	
Chloroethane	75-00-3	10	µg/L	<10	<10	<10	<10	----	
Trichlorofluoromethane	75-69-4	10	µg/L	<10	<10	<10	<10	----	
1.1-Dichloroethene	75-35-4	1	µg/L	<1	<1	<1	<1	----	
Iodomethane	74-88-4	1	µg/L	<2	<1	<1	<1	----	
Methylene chloride	75-09-2	5	µg/L	<5	<5	<5	<5	----	
trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	<1	<1	<1	----	
1.1-Dichloroethane	75-34-3	1	µg/L	<1	<1	<1	<1	----	
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	<1	<1	<1	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW32	GW33	GW34	GW35	GW36
Client sampling date / time				[18-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-026	EM1605749-027	EM1605749-028	EM1605749-029	EM1605749-030	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.1-Trichloroethane	71-55-6	1	µg/L	<1	<1	<1	<1	----	
1.1-Dichloropropylene	563-58-6	1	µg/L	<1	<1	<1	<1	----	
Carbon Tetrachloride	56-23-5	1	µg/L	<1	<1	<1	<1	----	
1.2-Dichloroethane	107-06-2	1	µg/L	<1	<1	<1	<1	----	
Trichloroethene	79-01-6	1	µg/L	<1	<1	<1	<1	----	
Dibromomethane	74-95-3	1	µg/L	<1	<1	<1	<1	----	
1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	<1	<1	<1	----	
1.3-Dichloropropane	142-28-9	1	µg/L	<1	<1	<1	<1	----	
Tetrachloroethene	127-18-4	1	µg/L	<1	<1	<1	<1	----	
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	<1	<1	<1	----	
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	<1	<1	<1	----	
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	<1	<1	<1	----	
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	<1	<1	<1	----	
1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	<1	<1	<1	----	
Pentachloroethane	76-01-7	1	µg/L	<1	<1	<1	<1	----	
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	<1	<1	<1	----	
Hexachlorobutadiene	87-68-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	----	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	1	µg/L	<1	<1	<1	<1	----	
Bromobenzene	108-86-1	1	µg/L	<1	<1	<1	<1	----	
2-Chlorotoluene	95-49-8	1	µg/L	<1	<1	<1	<1	----	
4-Chlorotoluene	106-43-4	1	µg/L	<1	<1	<1	<1	----	
1.3-Dichlorobenzene	541-73-1	1	µg/L	<1	<1	<1	<1	----	
1.4-Dichlorobenzene	106-46-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	----	
1.2-Dichlorobenzene	95-50-1	1	µg/L	<1	<1	<1	<1	----	
1.2.4-Trichlorobenzene	120-82-1	1	µg/L	<1	<1	<1	<1	----	
1.2.3-Trichlorobenzene	87-61-6	1	µg/L	<1	<1	<1	<1	----	
EP074G: Trihalomethanes									
Chloroform	67-66-3	1	µg/L	<1	<1	<1	<1	----	
Bromodichloromethane	75-27-4	1	µg/L	<1	<1	<1	<1	----	
Dibromochloromethane	124-48-1	1	µg/L	<1	<1	<1	<1	----	
Bromoform	75-25-2	1	µg/L	<1	<1	<1	<1	----	
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L	21	<5	<5	<5	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW32	GW33	GW34	GW35	GW36
Client sampling date / time				[18-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-026	EM1605749-027	EM1605749-028	EM1605749-029	EM1605749-030	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	27.0	<1.0	<1.0	<1.0	<1.0	
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Acenaphthene	83-32-9	1	µg/L	128	<1.0	<1.0	<1.0	<1.0	
Fluorene	86-73-7	1	µg/L	26.2	<1.0	<1.0	<1.0	<1.0	
Phenanthrene	85-01-8	1	µg/L	6.8	<1.0	<1.0	<1.0	<1.0	
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzo(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Chrysene	218-01-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzo(k)fluoranthene	207-08-9	1	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	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	188	<0.5	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	930	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	3540	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	2130	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	5670	<50	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	880	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	400	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	4180	<100	<100	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	1050	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	5230	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	4160	<100	<100	<100	<100	
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW32	GW33	GW34	GW35	GW36
Client sampling date / time					[18-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-026	EM1605749-027	EM1605749-028	EM1605749-029	EM1605749-030
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	1	µg/L		170	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		5	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		271	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		23	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		6	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L		29	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L		475	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		20	<5	<5	<5	<5
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%		119	107	104	111	----
Toluene-D8	2037-26-5	1	%		121	102	90.2	101	----
4-Bromofluorobenzene	460-00-4	1	%		113	99.7	93.0	99.3	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%		26.8	28.1	30.5	24.7	22.7
2-Chlorophenol-D4	93951-73-6	1	%		56.4	65.0	72.6	59.5	56.0
2,4,6-Tribromophenol	118-79-6	1	%		69.9	67.8	82.6	65.5	71.1
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%		62.5	72.7	76.6	65.6	66.7
Anthracene-d10	1719-06-8	1	%		71.2	88.0	95.1	85.5	84.0
4-Terphenyl-d14	1718-51-0	1	%		74.4	88.7	93.7	90.2	88.7
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		120	107	104	111	77.5
Toluene-D8	2037-26-5	2	%		113	102	90.5	102	79.7
4-Bromofluorobenzene	460-00-4	2	%		112	101	95.3	100	92.4



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		GW37	GW38	QC01	QC03	TB01
Client sampling date / time				[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[19-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-031	EM1605749-032	EM1605749-033	EM1605749-034	EM1605749-035
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.87	8.04	7.55	7.64	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	839	3360	972	1130	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	608	926	715	416	----
Total Alkalinity as CaCO3	----	1	mg/L	608	926	715	416	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	112	889	4	413	----
ED043: Total Oxidised Sulfur as SO4 2-								
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	421	----
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	113	1060	6	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	21	800	131	88	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	30	9	144	189	----
Magnesium	7439-95-4	1	mg/L	37	27	72	32	----
Sodium	7440-23-5	1	mg/L	202	1300	66	125	----
Potassium	7440-09-7	1	mg/L	30	26	24	23	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.03	0.01	<0.01	<0.01	----
Arsenic	7440-38-2	0.001	mg/L	0.003	0.003	0.002	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	0.001	0.002	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	0.077	0.026	0.013	0.013	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L	0.011	0.007	<0.005	0.007	----
Manganese	7439-96-5	0.001	mg/L	0.270	0.046	0.276	0.293	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Iron	7439-89-6	0.05	mg/L	0.05	<0.05	9.92	13.5	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW37	GW38	QC01	QC03	TB01
Client sampling date / time					[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[19-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-031	EM1605749-032	EM1605749-033	EM1605749-034	EM1605749-035	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.8	1.9	0.2	0.3	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.58	<0.01	7.06	7.63	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	0.04	<0.01	<0.01	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.05	2.47	0.01	0.01	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.30	<0.01	<0.01	----	----
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	15.1	59.6	18.1	19.4	----	----
Total Cations	----	0.01	meq/L	----	----	----	----	----	----
Total Cations	----	0.01	meq/L	14.1	59.9	16.6	18.1	----	----
Ionic Balance	----	0.01	%	----	----	----	----	----	----
Ionic Balance	----	0.01	%	3.39	0.21	4.23	3.46	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	----
Toluene	108-88-3	1	µg/L	<1	----	----	----	----	----
Ethylbenzene	100-41-4	1	µg/L	<1	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	----	----	----	----	----
Styrene	100-42-5	1	µg/L	<1	----	----	----	----	----
ortho-Xylene	95-47-6	1	µg/L	<1	----	----	----	----	----
Isopropylbenzene	98-82-8	1	µg/L	<1	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW37	GW38	QC01	QC03	TB01
Client sampling date / time					[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[19-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-031	EM1605749-032	EM1605749-033	EM1605749-034	EM1605749-035	
				Result	Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Propylbenzene	103-65-1	1	µg/L	<1	----	----	----	----	----
1.3.5-Trimethylbenzene	108-67-8	1	µg/L	<1	----	----	----	----	----
sec-Butylbenzene	135-98-8	1	µg/L	<1	----	----	----	----	----
1.2.4-Trimethylbenzene	95-63-6	1	µg/L	<1	----	----	----	----	----
tert-Butylbenzene	98-06-6	1	µg/L	<1	----	----	----	----	----
p-Isopropyltoluene	99-87-6	1	µg/L	<1	----	----	----	----	----
n-Butylbenzene	104-51-8	1	µg/L	<1	----	----	----	----	----
EP074B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	10	µg/L	<10	----	----	----	----	----
Vinyl Acetate	108-05-4	10	µg/L	<10	----	----	----	----	----
2-Butanone (MEK)	78-93-3	10	µg/L	<10	----	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	----	----	----	----	----
2-Hexanone (MBK)	591-78-6	10	µg/L	<10	----	----	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L	<1	----	----	----	----	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L	<1	----	----	----	----	----
1.2-Dichloropropane	78-87-5	1	µg/L	<1	----	----	----	----	----
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L	<2	----	----	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L	<2	----	----	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	----	----	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L	<10	----	----	----	----	----
Chloromethane	74-87-3	10	µg/L	<10	----	----	----	----	----
Vinyl chloride	75-01-4	10	µg/L	<10.0	----	----	----	----	----
Bromomethane	74-83-9	10	µg/L	<10	----	----	----	----	----
Chloroethane	75-00-3	10	µg/L	<10	----	----	----	----	----
Trichlorofluoromethane	75-69-4	10	µg/L	<10	----	----	----	----	----
1.1-Dichloroethene	75-35-4	1	µg/L	<1	----	----	----	----	----
Iodomethane	74-88-4	1	µg/L	<1	----	----	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	----	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	----	----	----	----	----
1.1-Dichloroethane	75-34-3	1	µg/L	<1	----	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW37	GW38	QC01	QC03	TB01
Client sampling date / time					[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[19-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-031	EM1605749-032	EM1605749-033	EM1605749-034	EM1605749-035	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.1-Trichloroethane	71-55-6	1	µg/L	<1	----	----	----	----	----
1.1-Dichloropropylene	563-58-6	1	µg/L	<1	----	----	----	----	----
Carbon Tetrachloride	56-23-5	1	µg/L	<1	----	----	----	----	----
1.2-Dichloroethane	107-06-2	1	µg/L	<1	----	----	----	----	----
Trichloroethene	79-01-6	1	µg/L	<1	----	----	----	----	----
Dibromomethane	74-95-3	1	µg/L	<1	----	----	----	----	----
1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	----	----	----	----	----
1.3-Dichloropropane	142-28-9	1	µg/L	<1	----	----	----	----	----
Tetrachloroethene	127-18-4	1	µg/L	<1	----	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	----	----	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	----	----	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	----	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	----	----	----	----	----
1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	----	----	----	----	----
Pentachloroethane	76-01-7	1	µg/L	<1	----	----	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	----	----	----	----	----
Hexachlorobutadiene	87-68-3	1	µg/L	<1.0	----	----	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	1	µg/L	<1	----	----	----	----	----
Bromobenzene	108-86-1	1	µg/L	<1	----	----	----	----	----
2-Chlorotoluene	95-49-8	1	µg/L	<1	----	----	----	----	----
4-Chlorotoluene	106-43-4	1	µg/L	<1	----	----	----	----	----
1.3-Dichlorobenzene	541-73-1	1	µg/L	<1	----	----	----	----	----
1.4-Dichlorobenzene	106-46-7	1	µg/L	<1.0	----	----	----	----	----
1.2-Dichlorobenzene	95-50-1	1	µg/L	<1	----	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	1	µg/L	<1	----	----	----	----	----
1.2.3-Trichlorobenzene	87-61-6	1	µg/L	<1	----	----	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	1	µg/L	<1	----	----	----	----	----
Bromodichloromethane	75-27-4	1	µg/L	<1	----	----	----	----	----
Dibromochloromethane	124-48-1	1	µg/L	<1	----	----	----	----	----
Bromoform	75-25-2	1	µg/L	<1	----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW37	GW38	QC01	QC03	TB01
Client sampling date / time					[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[19-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-031	EM1605749-032	EM1605749-033	EM1605749-034	EM1605749-035
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Acenaphthylene	208-96-8	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benz(a)anthracene	56-55-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1	µg/L		<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	----
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Dibenz(a.h)anthracene	53-70-3	1	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(g,h,i)perylene	191-24-2	1	µg/L		<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	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW37	GW38	QC01	QC03	TB01
Client sampling date / time					[17-May-2016]	[17-May-2016]	[17-May-2016]	[17-May-2016]	[19-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-031	EM1605749-032	EM1605749-033	EM1605749-034	EM1605749-035	
				Result	Result	Result	Result	Result	
EP080: BTEXN - Continued									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	<5
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	103	----	----	----	----	----
Toluene-D8	2037-26-5	1	%	93.4	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	1	%	95.4	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	28.6	26.5	29.5	32.4	----	----
2-Chlorophenol-D4	93951-73-6	1	%	69.3	59.6	73.6	71.8	----	----
2,4,6-Tribromophenol	118-79-6	1	%	68.5	63.7	71.5	65.4	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	73.7	68.5	77.6	75.0	----	----
Anthracene-d10	1719-06-8	1	%	89.8	87.8	95.0	90.9	----	----
4-Terphenyl-d14	1718-51-0	1	%	93.0	91.5	100	94.3	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	103	80.4	84.9	88.6	80.4	
Toluene-D8	2037-26-5	2	%	95.2	85.1	87.6	95.1	74.0	
4-Bromofluorobenzene	460-00-4	2	%	97.1	94.9	98.1	103	92.0	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB02	TB03	TB04	QCA	QCB
Client sampling date / time				[19-May-2016]	[19-May-2016]	[19-May-2016]	[16-May-2016]	[16-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-036	EM1605749-037	EM1605749-038	EM1605749-039	EM1605749-040	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	----	----	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----	----
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	----	----	----
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	----	----	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	----	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	----	----	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	----	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB02	TB03	TB04	QCA	QCB
Client sampling date / time				[19-May-2016]	[19-May-2016]	[19-May-2016]	[16-May-2016]	[16-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-036	EM1605749-037	EM1605749-038	EM1605749-039	EM1605749-040	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	<0.001	<0.001	
Nickel	7440-02-0	0.001	mg/L	----	----	----	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	<0.001	
Zinc	7440-66-6	0.005	mg/L	----	----	----	<0.005	<0.005	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	----	----	----	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	----	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	----	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	----	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	----	----	----	----	----	
Total Cations	----	0.01	meq/L	----	----	----	----	----	
Total Cations	----	0.01	meq/L	----	----	----	----	----	
Ionic Balance	----	0.01	%	----	----	----	----	----	
Ionic Balance	----	0.01	%	----	----	----	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	----	----	----	----	----	
Toluene	108-88-3	1	µg/L	----	----	----	----	----	
Ethylbenzene	100-41-4	1	µg/L	----	----	----	----	----	
meta- & para-Xylene	108-38-3	106-42-3	1	µg/L	----	----	----	----	
Styrene	100-42-5	1	µg/L	----	----	----	----	----	
ortho-Xylene	95-47-6	1	µg/L	----	----	----	----	----	
Isopropylbenzene	98-82-8	1	µg/L	----	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB02	TB03	TB04	QCA	QCB
Client sampling date / time					[19-May-2016]	[19-May-2016]	[19-May-2016]	[16-May-2016]	[16-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-036	EM1605749-037	EM1605749-038	EM1605749-039	EM1605749-040
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Propylbenzene	103-65-1	1	µg/L		----	----	----	----	----
1,3,5-Trimethylbenzene	108-67-8	1	µg/L		----	----	----	----	----
sec-Butylbenzene	135-98-8	1	µg/L		----	----	----	----	----
1,2,4-Trimethylbenzene	95-63-6	1	µg/L		----	----	----	----	----
tert-Butylbenzene	98-06-6	1	µg/L		----	----	----	----	----
p-Isopropyltoluene	99-87-6	1	µg/L		----	----	----	----	----
n-Butylbenzene	104-51-8	1	µg/L		----	----	----	----	----
EP074B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	10	µg/L		----	----	----	----	----
Vinyl Acetate	108-05-4	10	µg/L		----	----	----	----	----
2-Butanone (MEK)	78-93-3	10	µg/L		----	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L		----	----	----	----	----
2-Hexanone (MBK)	591-78-6	10	µg/L		----	----	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L		----	----	----	----	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	1	µg/L		----	----	----	----	----
1,2-Dichloropropane	78-87-5	1	µg/L		----	----	----	----	----
cis-1,3-Dichloropropylene	10061-01-5	2	µg/L		----	----	----	----	----
trans-1,3-Dichloropropylene	10061-02-6	2	µg/L		----	----	----	----	----
1,2-Dibromoethane (EDB)	106-93-4	1	µg/L		----	----	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L		----	----	----	----	----
Chloromethane	74-87-3	10	µg/L		----	----	----	----	----
Vinyl chloride	75-01-4	10	µg/L		----	----	----	----	----
Bromomethane	74-83-9	10	µg/L		----	----	----	----	----
Chloroethane	75-00-3	10	µg/L		----	----	----	----	----
Trichlorofluoromethane	75-69-4	10	µg/L		----	----	----	----	----
1,1-Dichloroethene	75-35-4	1	µg/L		----	----	----	----	----
Iodomethane	74-88-4	1	µg/L		----	----	----	----	----
Methylene chloride	75-09-2	5	µg/L		----	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	1	µg/L		----	----	----	----	----
1,1-Dichloroethane	75-34-3	1	µg/L		----	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	1	µg/L		----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB02	TB03	TB04	QCA	QCB
Client sampling date / time					[19-May-2016]	[19-May-2016]	[19-May-2016]	[16-May-2016]	[16-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-036	EM1605749-037	EM1605749-038	EM1605749-039	EM1605749-040
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.1-Trichloroethane	71-55-6	1	µg/L		----	----	----	----	----
1.1-Dichloropropylene	563-58-6	1	µg/L		----	----	----	----	----
Carbon Tetrachloride	56-23-5	1	µg/L		----	----	----	----	----
1.2-Dichloroethane	107-06-2	1	µg/L		----	----	----	----	----
Trichloroethene	79-01-6	1	µg/L		----	----	----	----	----
Dibromomethane	74-95-3	1	µg/L		----	----	----	----	----
1.1.2-Trichloroethane	79-00-5	1	µg/L		----	----	----	----	----
1.3-Dichloropropane	142-28-9	1	µg/L		----	----	----	----	----
Tetrachloroethene	127-18-4	1	µg/L		----	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L		----	----	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L		----	----	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L		----	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L		----	----	----	----	----
1.2.3-Trichloropropane	96-18-4	1	µg/L		----	----	----	----	----
Pentachloroethane	76-01-7	1	µg/L		----	----	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L		----	----	----	----	----
Hexachlorobutadiene	87-68-3	1	µg/L		----	----	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	1	µg/L		----	----	----	----	----
Bromobenzene	108-86-1	1	µg/L		----	----	----	----	----
2-Chlorotoluene	95-49-8	1	µg/L		----	----	----	----	----
4-Chlorotoluene	106-43-4	1	µg/L		----	----	----	----	----
1.3-Dichlorobenzene	541-73-1	1	µg/L		----	----	----	----	----
1.4-Dichlorobenzene	106-46-7	1	µg/L		----	----	----	----	----
1.2-Dichlorobenzene	95-50-1	1	µg/L		----	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	1	µg/L		----	----	----	----	----
1.2.3-Trichlorobenzene	87-61-6	1	µg/L		----	----	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	1	µg/L		----	----	----	----	----
Bromodichloromethane	75-27-4	1	µg/L		----	----	----	----	----
Dibromochloromethane	124-48-1	1	µg/L		----	----	----	----	----
Bromoform	75-25-2	1	µg/L		----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L		----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB02	TB03	TB04	QCA	QCB
Client sampling date / time					[19-May-2016]	[19-May-2016]	[19-May-2016]	[16-May-2016]	[16-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-036	EM1605749-037	EM1605749-038	EM1605749-039	EM1605749-040
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L		----	----	----	----	----
Acenaphthylene	208-96-8	1	µg/L		----	----	----	----	----
Acenaphthene	83-32-9	1	µg/L		----	----	----	----	----
Fluorene	86-73-7	1	µg/L		----	----	----	----	----
Phenanthrene	85-01-8	1	µg/L		----	----	----	----	----
Anthracene	120-12-7	1	µg/L		----	----	----	----	----
Fluoranthene	206-44-0	1	µg/L		----	----	----	----	----
Pyrene	129-00-0	1	µg/L		----	----	----	----	----
Benzo(a)anthracene	56-55-3	1	µg/L		----	----	----	----	----
Chrysene	218-01-9	1	µg/L		----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L		----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1	µg/L		----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L		----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1	µg/L		----	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	1	µg/L		----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		----	----	----	<50	<50
C15 - C28 Fraction	----	100	µg/L		----	----	----	<100	<100
C29 - C36 Fraction	----	50	µg/L		----	----	----	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	----	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		----	----	----	<100	<100
>C16 - C34 Fraction	----	100	µg/L		----	----	----	<100	<100
>C34 - C40 Fraction	----	100	µg/L		----	----	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	----	----	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	----	----	<100	<100
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB02	TB03	TB04	QCA	QCB
Client sampling date / time				[19-May-2016]	[19-May-2016]	[19-May-2016]	[16-May-2016]	[16-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-036	EM1605749-037	EM1605749-038	EM1605749-039	EM1605749-040	
				Result	Result	Result	Result	Result	
EP080: BTEXN - Continued									
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	
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	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	----	----	----	----	----	
Toluene-D8	2037-26-5	1	%	----	----	----	----	----	
4-Bromofluorobenzene	460-00-4	1	%	----	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	----	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	1	%	----	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	1	%	----	----	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	----	----	----	----	----	
Anthracene-d10	1719-06-8	1	%	----	----	----	----	----	
4-Terphenyl-d14	1718-51-0	1	%	----	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	101	83.8	87.9	90.1	80.6	
Toluene-D8	2037-26-5	2	%	106	90.2	91.1	92.6	79.7	
4-Bromofluorobenzene	460-00-4	2	%	118	101	100	104	90.0	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QCA1	QCB1	TB05	TB06	GW02
Client sampling date / time				[17-May-2016]	[17-May-2016]	[19-May-2016]	[19-May-2016]	[18-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-041	EM1605749-042	EM1605749-043	EM1605749-044	EM1605749-046	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	----	----	----	----	7.16	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	----	1770	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	1460	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	1460	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	<1	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	----	----	
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	----	6	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	----	----	----	----	323	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	----	----	----	----	70	
Magnesium	7439-95-4	1	mg/L	----	----	----	----	76	
Sodium	7440-23-5	1	mg/L	----	----	----	----	441	
Potassium	7440-09-7	1	mg/L	----	----	----	----	42	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	<0.01	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	0.004	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	0.005	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	<0.001	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	0.042	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	<0.001	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	0.014	
Manganese	7439-96-5	0.001	mg/L	----	----	----	----	0.070	
Selenium	7782-49-2	0.01	mg/L	----	----	----	----	<0.01	
Iron	7439-89-6	0.05	mg/L	----	----	----	----	10.5	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QCA1	QCB1	TB05	TB06	GW02
Client sampling date / time					[17-May-2016]	[17-May-2016]	[19-May-2016]	[19-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-041	EM1605749-042	EM1605749-043	EM1605749-044	EM1605749-046
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	----	----	----	<0.0001
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		----	----	----	----	0.6
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		----	----	----	----	72.5
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		----	----	----	----	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		----	----	----	----	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		----	----	----	----	<0.01
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		----	----	----	----	38.3
Total Cations	----	0.01	meq/L		----	----	----	----	35.2
Total Cations	----	0.01	meq/L		----	----	----	----	----
Ionic Balance	----	0.01	%		----	----	----	----	4.12
Ionic Balance	----	0.01	%		----	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L		----	----	----	----	----
Toluene	108-88-3	1	µg/L		----	----	----	----	----
Ethylbenzene	100-41-4	1	µg/L		----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L		----	----	----	----	----
Styrene	100-42-5	1	µg/L		----	----	----	----	----
ortho-Xylene	95-47-6	1	µg/L		----	----	----	----	----
Isopropylbenzene	98-82-8	1	µg/L		----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QCA1	QCB1	TB05	TB06	GW02
Client sampling date / time					[17-May-2016]	[17-May-2016]	[19-May-2016]	[19-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-041	EM1605749-042	EM1605749-043	EM1605749-044	EM1605749-046
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Propylbenzene	103-65-1	1	µg/L		----	----	----	----	----
1.3.5-Trimethylbenzene	108-67-8	1	µg/L		----	----	----	----	----
sec-Butylbenzene	135-98-8	1	µg/L		----	----	----	----	----
1.2.4-Trimethylbenzene	95-63-6	1	µg/L		----	----	----	----	----
tert-Butylbenzene	98-06-6	1	µg/L		----	----	----	----	----
p-Isopropyltoluene	99-87-6	1	µg/L		----	----	----	----	----
n-Butylbenzene	104-51-8	1	µg/L		----	----	----	----	----
EP074B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	10	µg/L		----	----	----	----	----
Vinyl Acetate	108-05-4	10	µg/L		----	----	----	----	----
2-Butanone (MEK)	78-93-3	10	µg/L		----	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L		----	----	----	----	----
2-Hexanone (MBK)	591-78-6	10	µg/L		----	----	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L		----	----	----	----	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L		----	----	----	----	----
1.2-Dichloropropane	78-87-5	1	µg/L		----	----	----	----	----
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L		----	----	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L		----	----	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L		----	----	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L		----	----	----	----	----
Chloromethane	74-87-3	10	µg/L		----	----	----	----	----
Vinyl chloride	75-01-4	10	µg/L		----	----	----	----	----
Bromomethane	74-83-9	10	µg/L		----	----	----	----	----
Chloroethane	75-00-3	10	µg/L		----	----	----	----	----
Trichlorofluoromethane	75-69-4	10	µg/L		----	----	----	----	----
1.1-Dichloroethene	75-35-4	1	µg/L		----	----	----	----	----
Iodomethane	74-88-4	1	µg/L		----	----	----	----	----
Methylene chloride	75-09-2	5	µg/L		----	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	1	µg/L		----	----	----	----	----
1.1-Dichloroethane	75-34-3	1	µg/L		----	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	1	µg/L		----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QCA1	QCB1	TB05	TB06	GW02
Client sampling date / time					[17-May-2016]	[17-May-2016]	[19-May-2016]	[19-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-041	EM1605749-042	EM1605749-043	EM1605749-044	EM1605749-046
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.1-Trichloroethane	71-55-6	1	µg/L		----	----	----	----	----
1.1-Dichloropropylene	563-58-6	1	µg/L		----	----	----	----	----
Carbon Tetrachloride	56-23-5	1	µg/L		----	----	----	----	----
1.2-Dichloroethane	107-06-2	1	µg/L		----	----	----	----	----
Trichloroethene	79-01-6	1	µg/L		----	----	----	----	----
Dibromomethane	74-95-3	1	µg/L		----	----	----	----	----
1.1.2-Trichloroethane	79-00-5	1	µg/L		----	----	----	----	----
1.3-Dichloropropane	142-28-9	1	µg/L		----	----	----	----	----
Tetrachloroethene	127-18-4	1	µg/L		----	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L		----	----	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L		----	----	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L		----	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L		----	----	----	----	----
1.2.3-Trichloropropane	96-18-4	1	µg/L		----	----	----	----	----
Pentachloroethane	76-01-7	1	µg/L		----	----	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L		----	----	----	----	----
Hexachlorobutadiene	87-68-3	1	µg/L		----	----	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	1	µg/L		----	----	----	----	----
Bromobenzene	108-86-1	1	µg/L		----	----	----	----	----
2-Chlorotoluene	95-49-8	1	µg/L		----	----	----	----	----
4-Chlorotoluene	106-43-4	1	µg/L		----	----	----	----	----
1.3-Dichlorobenzene	541-73-1	1	µg/L		----	----	----	----	----
1.4-Dichlorobenzene	106-46-7	1	µg/L		----	----	----	----	----
1.2-Dichlorobenzene	95-50-1	1	µg/L		----	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	1	µg/L		----	----	----	----	----
1.2.3-Trichlorobenzene	87-61-6	1	µg/L		----	----	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	1	µg/L		----	----	----	----	----
Bromodichloromethane	75-27-4	1	µg/L		----	----	----	----	----
Dibromochloromethane	124-48-1	1	µg/L		----	----	----	----	----
Bromoform	75-25-2	1	µg/L		----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L		----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QCA1	QCB1	TB05	TB06	GW02
Client sampling date / time					[17-May-2016]	[17-May-2016]	[19-May-2016]	[19-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-041	EM1605749-042	EM1605749-043	EM1605749-044	EM1605749-046
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L		----	----	----	----	<1.0
Acenaphthylene	208-96-8	1	µg/L		----	----	----	----	<1.0
Acenaphthene	83-32-9	1	µg/L		----	----	----	----	<1.0
Fluorene	86-73-7	1	µg/L		----	----	----	----	<1.0
Phenanthrene	85-01-8	1	µg/L		----	----	----	----	<1.0
Anthracene	120-12-7	1	µg/L		----	----	----	----	<1.0
Fluoranthene	206-44-0	1	µg/L		----	----	----	----	<1.0
Pyrene	129-00-0	1	µg/L		----	----	----	----	<1.0
Benzo(a)anthracene	56-55-3	1	µg/L		----	----	----	----	<1.0
Chrysene	218-01-9	1	µg/L		----	----	----	----	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L		----	----	----	----	<1.0
Benzo(k)fluoranthene	207-08-9	1	µg/L		----	----	----	----	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L		----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L		----	----	----	----	<1.0
Dibenz(a.h)anthracene	53-70-3	1	µg/L		----	----	----	----	<1.0
Benzo(g.h.i)perylene	191-24-2	1	µg/L		----	----	----	----	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		----	----	----	----	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	20
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	120
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	300
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	420
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	180
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	220
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	400
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	180
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QCA1	QCB1	TB05	TB06	GW02
Client sampling date / time					[17-May-2016]	[17-May-2016]	[19-May-2016]	[19-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-041	EM1605749-042	EM1605749-043	EM1605749-044	EM1605749-046	
				Result	Result	Result	Result	Result	
EP080: BTEXN - Continued									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	<5
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	----	----	----	----	----	----
Toluene-D8	2037-26-5	1	%	----	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	1	%	----	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	----	----	----	----	----	26.3
2-Chlorophenol-D4	93951-73-6	1	%	----	----	----	----	----	60.0
2,4,6-Tribromophenol	118-79-6	1	%	----	----	----	----	----	76.1
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	----	----	----	----	----	65.9
Anthracene-d10	1719-06-8	1	%	----	----	----	----	----	68.8
4-Terphenyl-d14	1718-51-0	1	%	----	----	----	----	----	69.2
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	91.7	97.4	84.8	86.2	106	
Toluene-D8	2037-26-5	2	%	92.7	98.3	86.3	88.6	104	
4-Bromofluorobenzene	460-00-4	2	%	102	113	98.3	98.7	99.1	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW10	GW13	GW23	GW27	GW29
Client sampling date / time				[18-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-047	EM1605749-048	EM1605749-049	EM1605749-050	EM1605749-051	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.38	7.31	6.56	6.35	7.15	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	557	612	2020	1090	978	
ED037P: Alkalinity by PC Titrator									
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	260	330	149	238	449	
Total Alkalinity as CaCO3	----	1	mg/L	260	330	149	238	449	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	112	124	626	530	238	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	----	----	
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	149	133	704	715	217	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	28	20	605	36	86	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	74	94	205	221	176	
Magnesium	7439-95-4	1	mg/L	24	24	55	31	29	
Sodium	7440-23-5	1	mg/L	47	50	352	45	92	
Potassium	7440-09-7	1	mg/L	9	12	27	12	12	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.04	0.03	0.09	0.05	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.014	0.007	<0.001	0.001	0.006	
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	0.002	<0.001	0.003	0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.002	<0.001	<0.001	<0.001	0.001	
Nickel	7440-02-0	0.001	mg/L	0.016	0.015	0.076	0.029	0.075	
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.040	0.013	0.049	0.025	0.018	
Manganese	7439-96-5	0.001	mg/L	0.041	0.076	0.362	0.953	0.056	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	4.17	0.85	11.7	22.2	6.34	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW10	GW13	GW23	GW27	GW29
Client sampling date / time				[18-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]	
Compound	CAS Number	LOR	Unit	EM1605749-047	EM1605749-048	EM1605749-049	EM1605749-050	EM1605749-051	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.4	0.9	0.3	0.5	0.3	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.51	0.06	2.04	0.95	0.16	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.10	0.01	0.01	0.02	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	8.32	9.74	33.1	16.8	16.4	
Total Cations	----	0.01	meq/L	----	----	----	----	----	
Total Cations	----	0.01	meq/L	7.94	9.15	30.8	15.8	15.5	
Ionic Balance	----	0.01	%	----	----	----	----	----	
Ionic Balance	----	0.01	%	2.30	3.12	3.62	2.91	2.73	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	----	<1	<1	----	<1	
Toluene	108-88-3	1	µg/L	----	<1	<1	----	<1	
Ethylbenzene	100-41-4	1	µg/L	----	<1	<1	----	<1	
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	----	<1	<1	----	<1	
Styrene	100-42-5	1	µg/L	----	<1	<1	----	<1	
ortho-Xylene	95-47-6	1	µg/L	----	<1	<1	----	<1	
Isopropylbenzene	98-82-8	1	µg/L	----	<1	<1	----	<1	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW10	GW13	GW23	GW27	GW29
Client sampling date / time					[18-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-047	EM1605749-048	EM1605749-049	EM1605749-050	EM1605749-051
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Propylbenzene	103-65-1	1	µg/L	----	<1	<1	<1	----	<1
1.3.5-Trimethylbenzene	108-67-8	1	µg/L	----	<1	<1	<1	----	<1
sec-Butylbenzene	135-98-8	1	µg/L	----	<1	<1	<1	----	<1
1.2.4-Trimethylbenzene	95-63-6	1	µg/L	----	<1	<1	<1	----	<1
tert-Butylbenzene	98-06-6	1	µg/L	----	<1	<1	<1	----	<1
p-Isopropyltoluene	99-87-6	1	µg/L	----	<1	<1	<1	----	<1
n-Butylbenzene	104-51-8	1	µg/L	----	<1	<1	<1	----	<1
EP074B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	10	µg/L	----	<10	<10	<10	----	<10
Vinyl Acetate	108-05-4	10	µg/L	----	<10	<10	<10	----	<10
2-Butanone (MEK)	78-93-3	10	µg/L	----	<10	<10	<10	----	<10
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	----	<10	<10	<10	----	<10
2-Hexanone (MBK)	591-78-6	10	µg/L	----	<10	<10	<10	----	<10
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L	----	<1	<1	<1	----	<1
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L	----	<1	<1	<1	----	<1
1.2-Dichloropropane	78-87-5	1	µg/L	----	<1	<1	<1	----	<1
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L	----	<2	<2	<2	----	<2
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L	----	<2	<2	<2	----	<2
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L	----	<1	<1	<1	----	<1
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L	----	<10	<10	<10	----	<10
Chloromethane	74-87-3	10	µg/L	----	<10	<10	<10	----	<10
Vinyl chloride	75-01-4	10	µg/L	----	<10.0	<10.0	<10.0	----	<10.0
Bromomethane	74-83-9	10	µg/L	----	<10	<10	<10	----	<10
Chloroethane	75-00-3	10	µg/L	----	<10	<10	<10	----	<10
Trichlorofluoromethane	75-69-4	10	µg/L	----	<10	<10	<10	----	<10
1.1-Dichloroethene	75-35-4	1	µg/L	----	<1	<1	<1	----	<1
Iodomethane	74-88-4	1	µg/L	----	<1	<1	<1	----	<1
Methylene chloride	75-09-2	5	µg/L	----	<5	<5	<5	----	<5
trans-1.2-Dichloroethene	156-60-5	1	µg/L	----	<1	<1	<1	----	<1
1.1-Dichloroethane	75-34-3	1	µg/L	----	<1	<1	<1	----	<1
cis-1.2-Dichloroethene	156-59-2	1	µg/L	----	<1	6	<1	----	<1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW10	GW13	GW23	GW27	GW29
Client sampling date / time					[18-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-047	EM1605749-048	EM1605749-049	EM1605749-050	EM1605749-051
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.1-Trichloroethane	71-55-6	1	µg/L		----	<1	<1	----	<1
1.1-Dichloropropylene	563-58-6	1	µg/L		----	<1	<1	----	<1
Carbon Tetrachloride	56-23-5	1	µg/L		----	<1	<1	----	<1
1.2-Dichloroethane	107-06-2	1	µg/L		----	<1	<1	----	<1
Trichloroethene	79-01-6	1	µg/L		----	<1	<1	----	<1
Dibromomethane	74-95-3	1	µg/L		----	<1	<1	----	<1
1.1.2-Trichloroethane	79-00-5	1	µg/L		----	<1	<1	----	<1
1.3-Dichloropropane	142-28-9	1	µg/L		----	<1	<1	----	<1
Tetrachloroethene	127-18-4	1	µg/L		----	<1	<1	----	<1
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L		----	<1	<1	----	<1
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L		----	<1	<1	----	<1
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L		----	<1	<1	----	<1
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L		----	<1	<1	----	<1
1.2.3-Trichloropropane	96-18-4	1	µg/L		----	<1	<1	----	<1
Pentachloroethane	76-01-7	1	µg/L		----	<1	<1	----	<1
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L		----	<1	<1	----	<1
Hexachlorobutadiene	87-68-3	1	µg/L		----	<1.0	<1.0	----	<1.0
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	1	µg/L		----	<1	<1	----	<1
Bromobenzene	108-86-1	1	µg/L		----	<1	<1	----	<1
2-Chlorotoluene	95-49-8	1	µg/L		----	<1	<1	----	<1
4-Chlorotoluene	106-43-4	1	µg/L		----	<1	<1	----	<1
1.3-Dichlorobenzene	541-73-1	1	µg/L		----	<1	<1	----	<1
1.4-Dichlorobenzene	106-46-7	1	µg/L		----	<1.0	<1.0	----	<1.0
1.2-Dichlorobenzene	95-50-1	1	µg/L		----	<1	<1	----	<1
1.2.4-Trichlorobenzene	120-82-1	1	µg/L		----	<1	<1	----	<1
1.2.3-Trichlorobenzene	87-61-6	1	µg/L		----	<1	<1	----	<1
EP074G: Trihalomethanes									
Chloroform	67-66-3	1	µg/L		----	<1	<1	----	<1
Bromodichloromethane	75-27-4	1	µg/L		----	<1	<1	----	<1
Dibromochloromethane	124-48-1	1	µg/L		----	<1	<1	----	<1
Bromoform	75-25-2	1	µg/L		----	<1	<1	----	<1
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L		----	<5	<5	----	<5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW10	GW13	GW23	GW27	GW29
Client sampling date / time					[18-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit	EM1605749-047	EM1605749-048	EM1605749-049	EM1605749-050	EM1605749-051	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzo(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Chrysene	218-01-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzo(k)fluoranthene	207-08-9	1	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	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	
EP080/071: Total Petroleum Hydrocarbons									
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	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	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	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW10	GW13	GW23	GW27	GW29
Client sampling date / time					[18-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]	[18-May-2016]
Compound	CAS Number	LOR	Unit		EM1605749-047	EM1605749-048	EM1605749-049	EM1605749-050	EM1605749-051
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
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
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
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%		----	112	113	----	112
Toluene-D8	2037-26-5	1	%		----	103	99.0	----	99.9
4-Bromofluorobenzene	460-00-4	1	%		----	98.7	93.1	----	92.7
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%		28.6	25.8	29.5	26.6	26.6
2-Chlorophenol-D4	93951-73-6	1	%		70.3	60.4	70.3	57.5	62.3
2,4,6-Tribromophenol	118-79-6	1	%		72.8	56.1	83.7	58.2	61.8
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%		80.8	64.6	77.9	64.8	69.8
Anthracene-d10	1719-06-8	1	%		89.4	73.3	84.1	64.7	71.2
4-Terphenyl-d14	1718-51-0	1	%		84.7	71.6	82.5	63.6	69.7
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		108	112	113	96.5	112
Toluene-D8	2037-26-5	2	%		102	103	99.4	91.3	101
4-Bromofluorobenzene	460-00-4	2	%		99.8	97.7	94.8	89.6	95.9



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		QCA2	QCB2	----	----	----
Client sampling date / time				[18-May-2016]	[18-May-2016]	----	----	----
Compound	CAS Number	LOR	Unit	EM1605749-052	EM1605749-053	-----	-----	-----
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
ED043: Total Oxidised Sulfur as SO4 2-								
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	----	----
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
Manganese	7439-96-5	0.001	mg/L	----	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QCA2	QCB2	----	----	----
Client sampling date / time				[18-May-2016]	[18-May-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EM1605749-052	EM1605749-053	-----	-----	-----	
				Result	Result	----	----	----	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	----	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	----	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	----	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	----	----	----	----	----	
Total Cations	----	0.01	meq/L	----	----	----	----	----	
Total Cations	----	0.01	meq/L	----	----	----	----	----	
Ionic Balance	----	0.01	%	----	----	----	----	----	
Ionic Balance	----	0.01	%	----	----	----	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	----	----	----	----	----	
Toluene	108-88-3	1	µg/L	----	----	----	----	----	
Ethylbenzene	100-41-4	1	µg/L	----	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	----	----	----	----	----	
Styrene	100-42-5	1	µg/L	----	----	----	----	----	
ortho-Xylene	95-47-6	1	µg/L	----	----	----	----	----	
Isopropylbenzene	98-82-8	1	µg/L	----	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QCA2	QCB2	----	----	----
Client sampling date / time					[18-May-2016]	[18-May-2016]	----	----	----
Compound	CAS Number	LOR	Unit		EM1605749-052	EM1605749-053	-----	-----	-----
					Result	Result	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Propylbenzene	103-65-1	1	µg/L		----	----	----	----	----
1,3,5-Trimethylbenzene	108-67-8	1	µg/L		----	----	----	----	----
sec-Butylbenzene	135-98-8	1	µg/L		----	----	----	----	----
1,2,4-Trimethylbenzene	95-63-6	1	µg/L		----	----	----	----	----
tert-Butylbenzene	98-06-6	1	µg/L		----	----	----	----	----
p-Isopropyltoluene	99-87-6	1	µg/L		----	----	----	----	----
n-Butylbenzene	104-51-8	1	µg/L		----	----	----	----	----
EP074B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	10	µg/L		----	----	----	----	----
Vinyl Acetate	108-05-4	10	µg/L		----	----	----	----	----
2-Butanone (MEK)	78-93-3	10	µg/L		----	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L		----	----	----	----	----
2-Hexanone (MBK)	591-78-6	10	µg/L		----	----	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L		----	----	----	----	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	1	µg/L		----	----	----	----	----
1,2-Dichloropropane	78-87-5	1	µg/L		----	----	----	----	----
cis-1,3-Dichloropropylene	10061-01-5	2	µg/L		----	----	----	----	----
trans-1,3-Dichloropropylene	10061-02-6	2	µg/L		----	----	----	----	----
1,2-Dibromoethane (EDB)	106-93-4	1	µg/L		----	----	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L		----	----	----	----	----
Chloromethane	74-87-3	10	µg/L		----	----	----	----	----
Vinyl chloride	75-01-4	10	µg/L		----	----	----	----	----
Bromomethane	74-83-9	10	µg/L		----	----	----	----	----
Chloroethane	75-00-3	10	µg/L		----	----	----	----	----
Trichlorofluoromethane	75-69-4	10	µg/L		----	----	----	----	----
1,1-Dichloroethene	75-35-4	1	µg/L		----	----	----	----	----
Iodomethane	74-88-4	1	µg/L		----	----	----	----	----
Methylene chloride	75-09-2	5	µg/L		----	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	1	µg/L		----	----	----	----	----
1,1-Dichloroethane	75-34-3	1	µg/L		----	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	1	µg/L		----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QCA2	QCB2	----	----	----
Client sampling date / time					[18-May-2016]	[18-May-2016]	----	----	----
Compound	CAS Number	LOR	Unit		EM1605749-052	EM1605749-053	-----	-----	-----
					Result	Result	----	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.1-Trichloroethane	71-55-6	1	µg/L		----	----	----	----	----
1.1-Dichloropropylene	563-58-6	1	µg/L		----	----	----	----	----
Carbon Tetrachloride	56-23-5	1	µg/L		----	----	----	----	----
1.2-Dichloroethane	107-06-2	1	µg/L		----	----	----	----	----
Trichloroethene	79-01-6	1	µg/L		----	----	----	----	----
Dibromomethane	74-95-3	1	µg/L		----	----	----	----	----
1.1.2-Trichloroethane	79-00-5	1	µg/L		----	----	----	----	----
1.3-Dichloropropane	142-28-9	1	µg/L		----	----	----	----	----
Tetrachloroethene	127-18-4	1	µg/L		----	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L		----	----	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L		----	----	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L		----	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L		----	----	----	----	----
1.2.3-Trichloropropane	96-18-4	1	µg/L		----	----	----	----	----
Pentachloroethane	76-01-7	1	µg/L		----	----	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L		----	----	----	----	----
Hexachlorobutadiene	87-68-3	1	µg/L		----	----	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	1	µg/L		----	----	----	----	----
Bromobenzene	108-86-1	1	µg/L		----	----	----	----	----
2-Chlorotoluene	95-49-8	1	µg/L		----	----	----	----	----
4-Chlorotoluene	106-43-4	1	µg/L		----	----	----	----	----
1.3-Dichlorobenzene	541-73-1	1	µg/L		----	----	----	----	----
1.4-Dichlorobenzene	106-46-7	1	µg/L		----	----	----	----	----
1.2-Dichlorobenzene	95-50-1	1	µg/L		----	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	1	µg/L		----	----	----	----	----
1.2.3-Trichlorobenzene	87-61-6	1	µg/L		----	----	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	1	µg/L		----	----	----	----	----
Bromodichloromethane	75-27-4	1	µg/L		----	----	----	----	----
Dibromochloromethane	124-48-1	1	µg/L		----	----	----	----	----
Bromoform	75-25-2	1	µg/L		----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L		----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QCA2	QCB2	----	----	----
Client sampling date / time				[18-May-2016]	[18-May-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EM1605749-052	EM1605749-053	-----	-----	-----	
				Result	Result	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	----	----	----	----	----	
Acenaphthylene	208-96-8	1	µg/L	----	----	----	----	----	
Acenaphthene	83-32-9	1	µg/L	----	----	----	----	----	
Fluorene	86-73-7	1	µg/L	----	----	----	----	----	
Phenanthrene	85-01-8	1	µg/L	----	----	----	----	----	
Anthracene	120-12-7	1	µg/L	----	----	----	----	----	
Fluoranthene	206-44-0	1	µg/L	----	----	----	----	----	
Pyrene	129-00-0	1	µg/L	----	----	----	----	----	
Benzo(a)anthracene	56-55-3	1	µg/L	----	----	----	----	----	
Chrysene	218-01-9	1	µg/L	----	----	----	----	----	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	----	----	----	----	----	
Benzo(k)fluoranthene	207-08-9	1	µg/L	----	----	----	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	----	----	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	----	----	----	----	
Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	----	----	----	----	
Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	----	----	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	----	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----	
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QCA2	QCB2	----	----	----
Client sampling date / time				[18-May-2016]	[18-May-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EM1605749-052	EM1605749-053	-----	-----	-----	
				Result	Result	----	----	----	
EP080: BTEXN - Continued									
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----	
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	----	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	----	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	----	----	----	----	----	
Toluene-D8	2037-26-5	1	%	----	----	----	----	----	
4-Bromofluorobenzene	460-00-4	1	%	----	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	----	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	1	%	----	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	1	%	----	----	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	----	----	----	----	----	
Anthracene-d10	1719-06-8	1	%	----	----	----	----	----	
4-Terphenyl-d14	1718-51-0	1	%	----	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	97.6	101	----	----	----	
Toluene-D8	2037-26-5	2	%	94.4	95.1	----	----	----	
4-Bromofluorobenzene	460-00-4	2	%	92.4	92.1	----	----	----	



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	120
Toluene-D8	2037-26-5	70	130
4-Bromofluorobenzene	460-00-4	70	128
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

QUALITY CONTROL REPORT

Work Order	: EM1605749	Page	: 1 of 36
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: LEVEL 9 8 EXHIBITION ST MELBOURNE VIC 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60431087 1.4	Date Samples Received	: 19-May-2016
Order number	: 60431087, 1.4	Date Analysis Commenced	: 20-May-2016
C-O-C number	: ----	Issue Date	: 30-May-2016
Sampler	: ZACHARY OCONNOR		
Site	: ----		
Quote number	: ----		
No. of samples received	: 53		
No. of samples analysed	: 52		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Herman Lin	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



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

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 461705)									
EM1605737-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.45	7.45	0.00	0% - 20%
EM1605604-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.38	7.44	0.810	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 461708)									
EM1605749-004	GW05	EA005-P: pH Value	----	0.01	pH Unit	6.98	7.01	0.429	0% - 20%
EM1605749-011	GW14	EA005-P: pH Value	----	0.01	pH Unit	6.83	6.81	0.293	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 461711)									
EM1605749-024	GW30	EA005-P: pH Value	----	0.01	pH Unit	2.98	2.95	1.01	0% - 20%
EM1605749-031	GW37	EA005-P: pH Value	----	0.01	pH Unit	7.87	7.79	1.02	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 463109)									
EM1605833-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.38	5.47	1.66	0% - 20%
EM1605749-047	GW10	EA005-P: pH Value	----	0.01	pH Unit	6.38	6.35	0.471	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 461253)									
EM1605604-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6340	6340	0.00	0% - 20%
EM1605746-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	68	72	5.02	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 461257)									
EM1605749-011	GW14	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	331	317	4.32	0% - 20%
EM1605749-020	GW24	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1800	1970	8.97	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 461258)									
EM1605749-031	GW37	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	839	790	6.02	0% - 20%
EM1605775-007	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	24200	24500	1.36	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 464148)									
EM1605749-046	GW02	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1770	1950	9.50	0% - 20%
EM1605793-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	14300	13700	4.64	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 (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 461707)									
EM1605737-005	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	639	639	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	639	639	0.00	0% - 20%
EM1605604-002	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	1330	1320	0.267	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	1330	1320	0.267	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 461709)									
EM1605749-019	GW22	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	117	109	6.82	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	117	109	6.82	0% - 20%
EM1605749-011	GW14	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	96	96	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	96	96	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 461712)									
EM1605788-004	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.00	No Limit
EM1605749-031	GW37	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	608	600	1.41	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	608	600	1.41	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 463108)									
EM1605775-007	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.00	No Limit
EM1605749-047	GW10	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	260	256	1.84	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	260	256	1.84	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 461403)									
EM1605737-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	331	339	2.39	0% - 20%
EM1605749-010	GW12	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	359	354	1.40	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 461409)									



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 (%)
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 461409) - continued									
EM1605749-021	GW25	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	992	980	1.15	0% - 20%
EM1605749-030	GW36	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	129	128	0.931	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 462855)									
EM1605833-003	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2720	2770	1.88	0% - 20%
EM1605749-046	GW02	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	0.00	No Limit
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 465801)									
EM1605749-001	GW01	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	38	39	0.00	0% - 20%
EM1605749-010	GW12	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	389	359	7.99	0% - 20%
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 465802)									
EM1605749-021	GW25	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	1030	1030	0.00	0% - 20%
EM1605749-030	GW36	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	151	150	1.14	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 461404)									
EM1605737-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	1990	2370	17.7	0% - 20%
EM1605749-010	GW12	ED045G: Chloride	16887-00-6	1	mg/L	142	142	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 461408)									
EM1605749-021	GW25	ED045G: Chloride	16887-00-6	1	mg/L	72	70	3.61	0% - 20%
EM1605749-030	GW36	ED045G: Chloride	16887-00-6	1	mg/L	289	289	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 462854)									
EM1605833-003	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	2840	2840	0.261	0% - 20%
EM1605749-046	GW02	ED045G: Chloride	16887-00-6	1	mg/L	323	321	0.558	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 460679)									
EM1605749-002	GW03	ED093F: Calcium	7440-70-2	1	mg/L	171	169	1.20	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	100	98	1.70	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	159	156	2.03	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	43	42	0.00	0% - 20%
EM1605749-010	GW12	ED093F: Calcium	7440-70-2	1	mg/L	228	231	1.25	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	29	29	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	95	95	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	20	20	0.00	0% - 50%
ED093F: Dissolved Major Cations (QC Lot: 460683)									
EM1605749-022	GW26	ED093F: Calcium	7440-70-2	1	mg/L	333	345	3.41	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	21	22	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	27	28	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	8	9	0.00	No Limit
EM1605775-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	1130	1180	3.90	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	1060	1100	4.18	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	12000	12400	3.35	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	56	58	2.34	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 (%)
ED093F: Dissolved Major Cations (QC Lot: 462966)									
EM1605749-047	GW10	ED093F: Calcium	7440-70-2	1	mg/L	74	75	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	24	24	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	47	48	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	9	9	0.00	No Limit
EM1605810-004	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	42	44	5.84	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	12	12	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	328	330	0.834	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	406	410	1.08	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 460678)									
EM1605749-001	GW01	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.005	0.005	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.035	0.034	2.90	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.021	0.022	6.36	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.006	<0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	5.18	5.13	0.979	0% - 20%
EM1605749-010	GW12	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.009	0.008	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.060	0.062	2.09	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.027	0.026	0.00	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.021	0.023	8.04	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	1.20	1.21	0.00	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 460682)									
EM1605749-021	GW25	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.708	0.665	6.23	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.017	0.016	9.70	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.007	0.006	0.00	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 (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 460682) - continued									
EM1605749-021	GW25	EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.01	0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	13.5	12.8	5.62	0% - 20%
EM1605775-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.955	0.980	2.60	0% - 20%
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.100	<0.100	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.100	<0.100	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.100	<0.100	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.100	<0.100	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.279	0.261	6.57	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	1.97	2.28	14.4	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	23.3	24.5	5.14	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<1.00	<1.00	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<1.00	<1.00	0.00	No Limit
EG020A-F: Iron	7439-89-6	0.05	mg/L	<5.00	<5.00	0.00	No Limit		
EG020F: Dissolved Metals by ICP-MS (QC Lot: 462965)									
EM1605749-046	GW02	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.004	0.003	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.005	0.004	36.3	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.070	0.061	13.2	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.042	0.036	17.0	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.014	0.014	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.02	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-F: Iron	7439-89-6	0.05	mg/L	10.5	9.35	11.3	0% - 20%		
EM1605833-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0010	0.0012	12.0	0% - 50%
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.005	0.006	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.023	0.025	10.8	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.006	0.007	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.593	0.562	5.36	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.167	0.164	1.41	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.018	0.019	7.92	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	3.03	2.85	6.03	0% - 20%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	0.02	0.02	0.00	No Limit
EG020A-F: Iron	7439-89-6	0.05	mg/L	0.13	0.13	0.00	No Limit		
EG020T: Total Metals by ICP-MS (QC Lot: 461800)									
EM1605778-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	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 (%)
EG020T: Total Metals by ICP-MS (QC Lot: 461800) - continued									
EM1605778-003	Anonymous	EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.020	0.017	15.6	No Limit
EM1605604-007	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit		
EG035F: Dissolved Mercury by FIMS (QC Lot: 460680)									
EM1605749-001	GW01	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1605749-010	GW12	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 460681)									
EM1605749-021	GW25	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1605775-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 462964)									
EM1605833-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1605749-046	GW02	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 464534)									
EM1605604-007	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1605749-040	QCB	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 461706)									
EM1605749-004	GW05	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.4	0.4	0.00	No Limit
EM1605604-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.5	0.5	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 461710)									
EM1605749-019	GW22	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.4	0.4	0.00	No Limit
EM1605749-011	GW14	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.7	0.7	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 461713)									
EM1605808-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	2.0	2.0	0.00	0% - 50%
EM1605749-031	GW37	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.8	0.9	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 463107)									
EM1605737-007	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1605749-047	GW10	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.4	0.4	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 461776)									
EM1605749-001	GW01	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	91.6	96.6	5.35	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 (%)	
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 461776) - continued										
EM1605749-010	GW12	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.15	0.14	0.00	0% - 50%	
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 461778)										
EM1605749-021	GW25	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	4.41	4.50	1.98	0% - 20%	
EM1605749-030	GW36	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	3.45	3.50	1.38	0% - 20%	
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 463074)										
EM1605749-046	GW02	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	72.5	70.5	2.81	0% - 20%	
EM1605827-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.87	0.89	2.95	0% - 20%	
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 461405)										
EM1605737-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.07	0.07	0.00	No Limit	
EM1605749-010	GW12	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.00	No Limit	
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 461410)										
EM1605749-021	GW25	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EM1605749-030	GW36	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 462856)										
EM1605833-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EM1605749-046	GW02	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 461406)										
EM1605749-001	GW01	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EM1605749-010	GW12	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 461411)										
EM1605749-021	GW25	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EM1605749-030	GW36	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.03	0.02	0.00	No Limit	
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 462853)										
EM1605749-046	GW02	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 461082)										
EM1605749-002	GW03	EP074-WF: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: Toluene	108-88-3	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: meta- & para-Xylene	108-38-3	1	µg/L	<1	<1	0.00	No Limit	
			106-42-3							
		EP074-WF: Styrene	100-42-5	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: 1,3,5-Trimethylbenzene	108-67-8	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: 1,2,4-Trimethylbenzene	95-63-6	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	<1	0.00	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 (%)	
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 461082) - continued										
EM1605749-002	GW03	EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	<1	0.00	No Limit	
EM1605749-016	GW19	EP074-WF: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: Toluene	108-88-3	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: meta- & para-Xylene	108-38-3	1	µg/L	<1	<1	0.00	No Limit	
			106-42-3							
		EP074-WF: Styrene	100-42-5	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: 1.3.5-Trimethylbenzene	108-67-8	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: 1.2.4-Trimethylbenzene	95-63-6	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	<1	0.00	No Limit	
EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	<1	0.00	No Limit			
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 461084)										
EM1605749-021	GW25	EP074-WF: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: Toluene	108-88-3	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: meta- & para-Xylene	108-38-3	1	µg/L	<1	<1	0.00	No Limit	
			106-42-3							
		EP074-WF: Styrene	100-42-5	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: 1.3.5-Trimethylbenzene	108-67-8	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: 1.2.4-Trimethylbenzene	95-63-6	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	<1	0.00	No Limit	
EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	<1	0.00	No Limit			
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 462550)										
EM1605749-048	GW13	EP074-WF: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: Toluene	108-88-3	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	<1	0.00	No Limit	
		EP074-WF: meta- & para-Xylene	108-38-3	1	µg/L	<1	<1	0.00	No Limit	
			106-42-3							
EP074-WF: Styrene	100-42-5	1	µg/L	<1	<1	0.00	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 (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 462550) - continued									
EM1605749-048	GW13	EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.3.5-Trimethylbenzene	108-67-8	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.2.4-Trimethylbenzene	95-63-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	<1	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 461082)									
EM1605749-002	GW03	EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	<10	0.00	No Limit
EM1605749-016	GW19	EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	20	10	0.00	No Limit
		EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	<10	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 461084)									
EM1605749-021	GW25	EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	<10	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 462550)									
EM1605749-048	GW13	EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	<10	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 461082)									
EM1605749-002	GW03	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	<1	0.00	No Limit
EM1605749-016	GW19	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	3	2	71.7	No Limit
EP074C: Sulfonated Compounds (QC Lot: 461084)									
EM1605749-021	GW25	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	<1	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 462550)									
EM1605749-048	GW13	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	<1	0.00	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 (%)
EP074D: Fumigants (QC Lot: 461082)									
EM1605749-002	GW03	EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	<2	0.00	No Limit
		EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	<2	0.00	No Limit
EM1605749-016	GW19	EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	<2	0.00	No Limit
		EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	<2	0.00	No Limit
EP074D: Fumigants (QC Lot: 461084)									
EM1605749-021	GW25	EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	<2	0.00	No Limit
		EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	<2	0.00	No Limit
EP074D: Fumigants (QC Lot: 462550)									
EM1605749-048	GW13	EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	<2	0.00	No Limit
		EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	<2	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 461082)									
EM1605749-002	GW03	EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<10.0	<10.0	0.00	No Limit
		EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<1.0	<1.0	0.00	No Limit
		EP074-WF: 1,1-Dichloroethene	75-35-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: trans-1,2-Dichloroethene	156-60-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,1-Dichloroethane	75-34-3	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: cis-1,2-Dichloroethene	156-59-2	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,1,1-Trichloroethane	71-55-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,1-Dichloropropylene	563-58-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dichloroethane	107-06-2	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,1,2-Trichloroethane	79-00-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,3-Dichloropropane	142-28-9	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L	<1	<1	0.00	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 (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 461082) - continued									
EM1605749-002	GW03	EP074-WF: trans-1,4-Dichloro-2-butene	110-57-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: cis-1,4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2,3-Trichloropropane	96-18-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Methylene chloride	75-09-2	2	µg/L	<5	<5	0.00	No Limit
EM1605749-016	GW19	EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<10.0	<10.0	0.00	No Limit
		EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<1.0	<1.0	0.00	No Limit
		EP074-WF: 1,1-Dichloroethene	75-35-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: trans-1,2-Dichloroethene	156-60-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,1-Dichloroethane	75-34-3	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: cis-1,2-Dichloroethene	156-59-2	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,1,1-Trichloroethane	71-55-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,1-Dichloropropylene	563-58-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dichloroethane	107-06-2	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,1,2-Trichloroethane	79-00-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,3-Dichloropropane	142-28-9	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: trans-1,4-Dichloro-2-butene	110-57-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: cis-1,4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2,3-Trichloropropane	96-18-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	<10	0.00	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 (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 461082) - continued									
EM1605749-016	GW19	EP074-WF: Methylene chloride	75-09-2	2	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 461084)									
EM1605749-021	GW25	EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<10.0	<10.0	0.00	No Limit
		EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<1.0	<1.0	0.00	No Limit
		EP074-WF: 1.1-Dichloroethene	75-35-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.1-Dichloroethane	75-34-3	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: cis-1.2-Dichloroethene	156-59-2	1	µg/L	24	24	0.00	0% - 20%
		EP074-WF: 1.1.1-Trichloroethane	71-55-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.1-Dichloropropylene	563-58-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.2-Dichloroethane	107-06-2	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.3-Dichloropropane	142-28-9	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	<10	0.00	No Limit
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<5	<5	0.00	No Limit		
EP074E: Halogenated Aliphatic Compounds (QC Lot: 462550)									
EM1605749-048	GW13	EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<10.0	<10.0	0.00	No Limit
		EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<1.0	<1.0	0.00	No Limit
		EP074-WF: 1.1-Dichloroethene	75-35-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.1-Dichloroethane	75-34-3	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.1.1-Trichloroethane	71-55-6	1	µg/L	<1	<1	0.00	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 (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 462550) - continued									
EM1605749-048	GW13	EP074-WF: 1.1-Dichloropropylene	563-58-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.2-Dichloroethane	107-06-2	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.3-Dichloropropane	142-28-9	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	<10	0.00	No Limit
		EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	<10	0.00	No Limit
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<5	<5	0.00	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 461082)									
EM1605749-002	GW03	EP074-WF: 1.4-Dichlorobenzene	106-46-7	0.1	µg/L	<1.0	<1.0	0.00	No Limit
		EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.3-Dichlorobenzene	541-73-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.2-Dichlorobenzene	95-50-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.2.4-Trichlorobenzene	120-82-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1.2.3-Trichlorobenzene	87-61-6	1	µg/L	<1	<1	0.00	No Limit
		EM1605749-016	GW19	EP074-WF: 1.4-Dichlorobenzene	106-46-7	0.1	µg/L	<1.0	<1.0
EP074-WF: Chlorobenzene	108-90-7			1	µg/L	<1	<1	0.00	No Limit
EP074-WF: Bromobenzene	108-86-1			1	µg/L	<1	<1	0.00	No Limit
EP074-WF: 2-Chlorotoluene	95-49-8			1	µg/L	<1	<1	0.00	No Limit
EP074-WF: 4-Chlorotoluene	106-43-4			1	µg/L	<1	<1	0.00	No Limit
EP074-WF: 1.3-Dichlorobenzene	541-73-1			1	µg/L	<1	<1	0.00	No Limit
EP074-WF: 1.2-Dichlorobenzene	95-50-1			1	µg/L	<1	<1	0.00	No Limit
EP074-WF: 1.2.4-Trichlorobenzene	120-82-1			1	µg/L	<1	<1	0.00	No Limit
EP074-WF: 1.2.3-Trichlorobenzene	87-61-6			1	µg/L	<1	<1	0.00	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 (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 461084)									
EM1605749-021	GW25	EP074-WF: 1,4-Dichlorobenzene	106-46-7	0.1	µg/L	<1.0	<1.0	0.00	No Limit
		EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,3-Dichlorobenzene	541-73-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dichlorobenzene	95-50-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2,4-Trichlorobenzene	120-82-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2,3-Trichlorobenzene	87-61-6	1	µg/L	<1	<1	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 462550)									
EM1605749-048	GW13	EP074-WF: 1,4-Dichlorobenzene	106-46-7	0.1	µg/L	<1.0	<1.0	0.00	No Limit
		EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,3-Dichlorobenzene	541-73-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2-Dichlorobenzene	95-50-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2,4-Trichlorobenzene	120-82-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: 1,2,3-Trichlorobenzene	87-61-6	1	µg/L	<1	<1	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 461082)									
EM1605749-002	GW03	EP074-WF: Chloroform	67-66-3	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Bromoform	75-25-2	1	µg/L	<1	<1	0.00	No Limit
EM1605749-016	GW19	EP074-WF: Chloroform	67-66-3	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Bromoform	75-25-2	1	µg/L	<1	<1	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 461084)									
EM1605749-021	GW25	EP074-WF: Chloroform	67-66-3	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Bromoform	75-25-2	1	µg/L	<1	<1	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 462550)									
EM1605749-048	GW13	EP074-WF: Chloroform	67-66-3	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: Bromoform	75-25-2	1	µg/L	<1	<1	0.00	No Limit
EP074H: Naphthalene (QC Lot: 461082)									



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 (%)
EP074H: Naphthalene (QC Lot: 461082) - continued									
EM1605749-002	GW03	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1605749-016	GW19	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 461084)									
EM1605749-021	GW25	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 462550)									
EM1605749-048	GW13	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 461081)									
EM1605749-002	GW03	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1605749-016	GW19	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 461083)									
EM1605749-021	GW25	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 461085)									
EM1605749-023	GW28	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1605749-040	QCB	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 462549)									
EM1605749-048	GW13	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 462555)									
EM1605604-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1605884-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 461081)									
EM1605749-002	GW03	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1605749-016	GW19	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 461083)									
EM1605749-021	GW25	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 461085)									
EM1605749-023	GW28	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1605749-040	QCB	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 462549)									
EM1605749-048	GW13	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 462555)									
EM1605604-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1605884-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 461081)									
EM1605749-002	GW03	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	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 (%)	
EP080: BTEXN (QC Lot: 461081) - continued										
EM1605749-002	GW03	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit	
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
EM1605749-016	GW19	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit	
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
EP080: BTEXN (QC Lot: 461083)										
EM1605749-021	GW25	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit	
	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit		
EP080: BTEXN (QC Lot: 461085)										
EM1605749-023	GW28	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit	
	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit		
EM1605749-040	QCB	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit	
	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit		
EP080: BTEXN (QC Lot: 462549)										
EM1605749-048	GW13	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit	
	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	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 (%)
EP080: BTEXN (QC Lot: 462555)									
EM1605604-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1605884-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	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 Spike (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	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 461253)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	97	105	
				<10	293 mg/L	103	97	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 461257)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.7	97	105	
				<10	293 mg/L	99.3	97	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 461258)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	97	105	
				<10	293 mg/L	101	97	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 464148)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	97	105	
				<10	293 mg/L	100	97	105	
ED037P: Alkalinity by PC Titrator (QCLot: 461707)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	99.4	90	110	
ED037P: Alkalinity by PC Titrator (QCLot: 461709)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	99.9	90	110	
ED037P: Alkalinity by PC Titrator (QCLot: 461712)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	100	90	110	
ED037P: Alkalinity by PC Titrator (QCLot: 463108)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	104	90	110	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 461403)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	105	90	116	
				<1	100 mg/L	101	80	120	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 461409)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	108	90	116	
				<1	100 mg/L	96.8	80	120	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 462855)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	105	90	116	
				<1	100 mg/L	96.7	80	120	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 465801)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<1	500 mg/L	101	87	121	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 465802)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<1	500 mg/L	103	87	121	
ED045G: Chloride by Discrete Analyser (QCLot: 461404)									



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
ED045G: Chloride by Discrete Analyser (QCLot: 461404) - continued								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	96.7	89	117
				<1	1000 mg/L	104	92	112
ED045G: Chloride by Discrete Analyser (QCLot: 461408)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	95.4	89	117
				<1	1000 mg/L	104	92	112
ED045G: Chloride by Discrete Analyser (QCLot: 462854)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	98.0	89	117
				<1	1000 mg/L	105	92	112
ED093F: Dissolved Major Cations (QCLot: 460679)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	101	92	108
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	105	92	108
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	100	89	107
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	102	89	107
ED093F: Dissolved Major Cations (QCLot: 460683)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	105	92	108
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	100	92	108
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	98.7	89	107
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	100	89	107
ED093F: Dissolved Major Cations (QCLot: 462966)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	107	92	108
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	102	92	108
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	96.5	89	107
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	97.4	89	107
EG020F: Dissolved Metals by ICP-MS (QCLot: 460678)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	99.6	93	105
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	94	108
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	89.9	86	108
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	91.7	86	110
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.1	87	107
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	89.6	87	109
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	93.6	87	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	90.6	87	109
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	91.4	87	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	92.9	87	107
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	99.6	94	106
EG020F: Dissolved Metals by ICP-MS (QCLot: 460682)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	98.1	93	105
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.1	94	108



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	
EG020F: Dissolved Metals by ICP-MS (QCLot: 460682) - continued									
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.9	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	91.4	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.5	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	89.8	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	95.3	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	89.6	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.8	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	89.4	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	99.0	94	106	
EG020F: Dissolved Metals by ICP-MS (QCLot: 462965)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	99.9	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.2	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	91.8	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.9	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	89.4	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	90.3	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.2	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	90.9	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	93.0	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.8	94	106	
EG020T: Total Metals by ICP-MS (QCLot: 461800)									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	105	94	116	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.8	90	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	102	90	110	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.1	91	109	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.6	91	111	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.9	91	111	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.2	91	109	
EG035F: Dissolved Mercury by FIMS (QCLot: 460680)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.0	83	117	
EG035F: Dissolved Mercury by FIMS (QCLot: 460681)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.8	83	117	
EG035F: Dissolved Mercury by FIMS (QCLot: 462964)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	107	83	117	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 464534)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.7	87	113	
EK040P: Fluoride by PC Titrator (QCLot: 461706)									



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
EK040P: Fluoride by PC Titrator (QCLot: 461706) - continued								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	102	89	111
EK040P: Fluoride by PC Titrator (QCLot: 461710)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	104	89	111
EK040P: Fluoride by PC Titrator (QCLot: 461713)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	103	89	111
EK040P: Fluoride by PC Titrator (QCLot: 463107)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	105	89	111
EK055G: Ammonia as N by Discrete Analyser (QCLot: 461776)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	115	80	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 461778)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	97.1	80	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 463074)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	109	80	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 461405)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	100	92	108
EK057G: Nitrite as N by Discrete Analyser (QCLot: 461410)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.8	92	108
EK057G: Nitrite as N by Discrete Analyser (QCLot: 462856)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	103	92	108
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 461406)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	98.0	94	108
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 461411)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	105	94	108
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 462853)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	99.1	94	108
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 461082)								
EP074-WF: Benzene	71-43-2	1	µg/L	<1	20 µg/L	93.0	81	119
EP074-WF: Toluene	108-88-3	1	µg/L	<1	20 µg/L	98.4	81	121
EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	20 µg/L	95.7	78	118
EP074-WF: meta- & para-Xylene	108-38-3	1	µg/L	<1	40 µg/L	98.8	78	118
	106-42-3							
EP074-WF: Styrene	100-42-5	1	µg/L	<1	20 µg/L	93.4	78	118
EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	20 µg/L	100	82	118
EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	20 µg/L	96.6	77	117
EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	20 µg/L	92.6	74	110
EP074-WF: 1,3,5-Trimethylbenzene	108-67-8	1	µg/L	<1	20 µg/L	93.3	77	109
EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	20 µg/L	92.9	76	110



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	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 461082) - continued									
EP074-WF: 1,2,4-Trimethylbenzene	95-63-6	1	µg/L	<1	20 µg/L	94.3	77	109	
EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	20 µg/L	92.0	78	110	
EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	20 µg/L	94.9	73	113	
EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	20 µg/L	94.9	65	111	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 461084)									
EP074-WF: Benzene	71-43-2	1	µg/L	<1	20 µg/L	100	81	119	
EP074-WF: Toluene	108-88-3	1	µg/L	<1	20 µg/L	98.1	81	121	
EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	20 µg/L	99.5	78	118	
EP074-WF: meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	40 µg/L	96.9	78	118	
EP074-WF: Styrene	100-42-5	1	µg/L	<1	20 µg/L	94.4	78	118	
EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	20 µg/L	99.4	82	118	
EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	20 µg/L	93.7	77	117	
EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	20 µg/L	90.1	74	110	
EP074-WF: 1,3,5-Trimethylbenzene	108-67-8	1	µg/L	<1	20 µg/L	92.0	77	109	
EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	20 µg/L	92.7	76	110	
EP074-WF: 1,2,4-Trimethylbenzene	95-63-6	1	µg/L	<1	20 µg/L	94.4	77	109	
EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	20 µg/L	92.2	78	110	
EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	20 µg/L	90.5	73	113	
EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	20 µg/L	83.8	65	111	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 462550)									
EP074-WF: Benzene	71-43-2	1	µg/L	<1	20 µg/L	93.3	81	119	
EP074-WF: Toluene	108-88-3	1	µg/L	<1	20 µg/L	88.8	81	121	
EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	20 µg/L	88.7	78	118	
EP074-WF: meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	40 µg/L	88.4	78	118	
EP074-WF: Styrene	100-42-5	1	µg/L	<1	20 µg/L	80.9	78	118	
EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	20 µg/L	89.9	82	118	
EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	20 µg/L	85.6	77	117	
EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	20 µg/L	83.5	74	110	
EP074-WF: 1,3,5-Trimethylbenzene	108-67-8	1	µg/L	<1	20 µg/L	84.5	77	109	
EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	20 µg/L	83.4	76	110	
EP074-WF: 1,2,4-Trimethylbenzene	95-63-6	1	µg/L	<1	20 µg/L	84.9	77	109	
EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	20 µg/L	83.3	78	110	
EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	20 µg/L	83.3	73	113	
EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	20 µg/L	78.6	65	111	
EP074B: Oxygenated Compounds (QCLot: 461082)									
EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	200 µg/L	97.2	69	151	



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	
EP074B: Oxygenated Compounds (QCLot: 461082) - continued									
EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	200 µg/L	94.7	65	129	
EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	200 µg/L	91.6	71	131	
EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	200 µg/L	94.3	72	132	
EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	200 µg/L	97.2	75	129	
EP074B: Oxygenated Compounds (QCLot: 461084)									
EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	200 µg/L	116	69	151	
EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	200 µg/L	108	65	129	
EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	200 µg/L	108	71	131	
EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	200 µg/L	111	72	132	
EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	200 µg/L	113	75	129	
EP074B: Oxygenated Compounds (QCLot: 462550)									
EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	200 µg/L	99.2	69	151	
EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	200 µg/L	94.4	65	129	
EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	200 µg/L	90.1	71	131	
EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	200 µg/L	93.5	72	132	
EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	200 µg/L	93.3	75	129	
EP074C: Sulfonated Compounds (QCLot: 461082)									
EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	20 µg/L	82.3	53	123	
EP074C: Sulfonated Compounds (QCLot: 461084)									
EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	20 µg/L	117	53	123	
EP074C: Sulfonated Compounds (QCLot: 462550)									
EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	20 µg/L	93.0	53	123	
EP074D: Fumigants (QCLot: 461082)									
EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	20 µg/L	90.9	69	115	
EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	20 µg/L	95.9	80	118	
EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	20 µg/L	87.4	72	110	
EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	20 µg/L	86.9	70	108	
EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	20 µg/L	95.6	81	115	
EP074D: Fumigants (QCLot: 461084)									
EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	20 µg/L	102	69	115	
EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	20 µg/L	114	80	118	
EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	20 µg/L	99.3	72	110	
EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	20 µg/L	98.7	70	108	
EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	20 µg/L	98.0	81	115	
EP074D: Fumigants (QCLot: 462550)									
EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	20 µg/L	88.6	69	115	
EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	20 µg/L	96.8	80	118	



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	
EP074D: Fumigants (QCLot: 462550) - continued									
EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	20 µg/L	87.0	72	110	
EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	20 µg/L	84.5	70	108	
EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	20 µg/L	83.3	81	115	
EP074E: Halogenated Aliphatic Compounds (QCLot: 461082)									
EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	200 µg/L	82.8	61	137	
EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	200 µg/L	97.3	66	138	
EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	200 µg/L	88.3	60	138	
EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	200 µg/L	73.6	52	128	
EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	200 µg/L	84.2	67	127	
EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	200 µg/L	90.7	70	124	
EP074-WF: 1,1-Dichloroethene	75-35-4	1	µg/L	<1	20 µg/L	88.1	68	122	
EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	20 µg/L	51.1	26	119	
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	20 µg/L	108	52	184	
EP074-WF: trans-1,2-Dichloroethene	156-60-5	1	µg/L	<1	20 µg/L	89.1	69	123	
EP074-WF: 1,1-Dichloroethane	75-34-3	1	µg/L	<1	20 µg/L	90.0	76	120	
EP074-WF: cis-1,2-Dichloroethene	156-59-2	1	µg/L	<1	20 µg/L	93.1	82	118	
EP074-WF: 1,1,1-Trichloroethane	71-55-6	1	µg/L	<1	20 µg/L	87.9	75	113	
EP074-WF: 1,1-Dichloropropylene	563-58-6	1	µg/L	<1	20 µg/L	88.9	73	117	
EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	20 µg/L	84.6	66	110	
EP074-WF: 1,2-Dichloroethane	107-06-2	1	µg/L	<1	20 µg/L	93.9	81	119	
EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	20 µg/L	95.0	76	118	
EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	20 µg/L	90.8	80	116	
EP074-WF: 1,1,2-Trichloroethane	79-00-5	1	µg/L	<1	20 µg/L	97.7	85	117	
EP074-WF: 1,3-Dichloropropane	142-28-9	1	µg/L	<1	20 µg/L	99.9	85	117	
EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	20 µg/L	95.3	74	116	
EP074-WF: 1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L	<1	20 µg/L	91.1	75	107	
EP074-WF: trans-1,4-Dichloro-2-butene	110-57-6	1	µg/L	<1	20 µg/L	90.2	64	118	
EP074-WF: cis-1,4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	20 µg/L	78.6	51	109	
EP074-WF: 1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L	<1	20 µg/L	97.4	85	121	
EP074-WF: 1,2,3-Trichloropropane	96-18-4	1	µg/L	<1	20 µg/L	97.4	84	118	
EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	20 µg/L	84.5	52	126	
EP074-WF: 1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	20 µg/L	83.8	64	114	
EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	20 µg/L	103	64	118	
EP074E: Halogenated Aliphatic Compounds (QCLot: 461084)									
EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	200 µg/L	112	61	137	
EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	200 µg/L	91.2	66	138	
EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	200 µg/L	102	60	138	
EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	200 µg/L	63.6	52	128	
EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	200 µg/L	99.8	67	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	
EP074E: Halogenated Aliphatic Compounds (QCLot: 461084) - continued									
EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	200 µg/L	92.2	70	124	
EP074-WF: 1.1-Dichloroethene	75-35-4	1	µg/L	<1	20 µg/L	102	68	122	
EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	20 µg/L	45.8	26	119	
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	20 µg/L	117	52	184	
EP074-WF: trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	20 µg/L	98.6	69	123	
EP074-WF: 1.1-Dichloroethane	75-34-3	1	µg/L	<1	20 µg/L	107	76	120	
EP074-WF: cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	20 µg/L	104	82	118	
EP074-WF: 1.1.1-Trichloroethane	71-55-6	1	µg/L	<1	20 µg/L	103	75	113	
EP074-WF: 1.1-Dichloropropylene	563-58-6	1	µg/L	<1	20 µg/L	99.1	73	117	
EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	20 µg/L	97.2	66	110	
EP074-WF: 1.2-Dichloroethane	107-06-2	1	µg/L	<1	20 µg/L	112	81	119	
EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	20 µg/L	106	76	118	
EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	20 µg/L	106	80	116	
EP074-WF: 1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	20 µg/L	108	85	117	
EP074-WF: 1.3-Dichloropropane	142-28-9	1	µg/L	<1	20 µg/L	102	85	117	
EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	20 µg/L	88.5	74	116	
EP074-WF: 1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	20 µg/L	96.8	75	107	
EP074-WF: trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	20 µg/L	98.4	64	118	
EP074-WF: cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	20 µg/L	84.2	51	109	
EP074-WF: 1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	20 µg/L	110	85	121	
EP074-WF: 1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	20 µg/L	109	84	118	
EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	20 µg/L	86.4	52	126	
EP074-WF: 1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	20 µg/L	106	64	114	
EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	20 µg/L	84.6	64	118	
EP074E: Halogenated Aliphatic Compounds (QCLot: 462550)									
EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	200 µg/L	101	61	137	
EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	200 µg/L	84.0	66	138	
EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	200 µg/L	96.2	60	138	
EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	200 µg/L	74.5	52	128	
EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	200 µg/L	92.1	67	127	
EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	200 µg/L	89.6	70	124	
EP074-WF: 1.1-Dichloroethene	75-35-4	1	µg/L	<1	20 µg/L	91.8	68	122	
EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	20 µg/L	40.6	26	119	
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	20 µg/L	113	52	184	
EP074-WF: trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	20 µg/L	91.3	69	123	
EP074-WF: 1.1-Dichloroethane	75-34-3	1	µg/L	<1	20 µg/L	93.1	76	120	
EP074-WF: cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	20 µg/L	93.8	82	118	
EP074-WF: 1.1.1-Trichloroethane	71-55-6	1	µg/L	<1	20 µg/L	94.2	75	113	
EP074-WF: 1.1-Dichloropropylene	563-58-6	1	µg/L	<1	20 µg/L	92.1	73	117	



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	
EP074E: Halogenated Aliphatic Compounds (QCLot: 462550) - continued									
EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	20 µg/L	89.3	66	110	
EP074-WF: 1,2-Dichloroethane	107-06-2	1	µg/L	<1	20 µg/L	98.4	81	119	
EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	20 µg/L	102	76	118	
EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	20 µg/L	93.1	80	116	
EP074-WF: 1,1,2-Trichloroethane	79-00-5	1	µg/L	<1	20 µg/L	91.6	85	117	
EP074-WF: 1,3-Dichloropropane	142-28-9	1	µg/L	<1	20 µg/L	89.8	85	117	
EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	20 µg/L	83.2	74	116	
EP074-WF: 1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L	<1	20 µg/L	85.8	75	107	
EP074-WF: trans-1,4-Dichloro-2-butene	110-57-6	1	µg/L	<1	20 µg/L	84.2	64	118	
EP074-WF: cis-1,4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	20 µg/L	67.6	51	109	
EP074-WF: 1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L	<1	20 µg/L	93.4	85	121	
EP074-WF: 1,2,3-Trichloropropane	96-18-4	1	µg/L	<1	20 µg/L	93.0	84	118	
EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	20 µg/L	76.6	52	126	
EP074-WF: 1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	20 µg/L	89.6	64	114	
EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	20 µg/L	81.9	64	118	
EP074F: Halogenated Aromatic Compounds (QCLot: 461082)									
EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	20 µg/L	94.0	82	116	
EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	20 µg/L	100	71	117	
EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	20 µg/L	94.9	79	111	
EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	20 µg/L	96.6	77	111	
EP074-WF: 1,3-Dichlorobenzene	541-73-1	1	µg/L	<1	20 µg/L	96.0	78	112	
EP074-WF: 1,4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	20 µg/L	98.4	78	116	
EP074-WF: 1,2-Dichlorobenzene	95-50-1	1	µg/L	<1	20 µg/L	94.6	83	113	
EP074-WF: 1,2,4-Trichlorobenzene	120-82-1	1	µg/L	<1	20 µg/L	102	68	112	
EP074-WF: 1,2,3-Trichlorobenzene	87-61-6	1	µg/L	<1	20 µg/L	103	78	116	
EP074F: Halogenated Aromatic Compounds (QCLot: 461084)									
EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	20 µg/L	95.0	82	116	
EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	20 µg/L	117	71	117	
EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	20 µg/L	96.6	79	111	
EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	20 µg/L	96.0	77	111	
EP074-WF: 1,3-Dichlorobenzene	541-73-1	1	µg/L	<1	20 µg/L	95.1	78	112	
EP074-WF: 1,4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	20 µg/L	98.8	78	116	
EP074-WF: 1,2-Dichlorobenzene	95-50-1	1	µg/L	<1	20 µg/L	100	83	113	
EP074-WF: 1,2,4-Trichlorobenzene	120-82-1	1	µg/L	<1	20 µg/L	88.3	68	112	
EP074-WF: 1,2,3-Trichlorobenzene	87-61-6	1	µg/L	<1	20 µg/L	97.4	78	116	
EP074F: Halogenated Aromatic Compounds (QCLot: 462550)									
EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	20 µg/L	84.2	82	116	
EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	20 µg/L	102	71	117	



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	
EP074F: Halogenated Aromatic Compounds (QCLot: 462550) - continued									
EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	20 µg/L	88.9	79	111	
EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	20 µg/L	87.5	77	111	
EP074-WF: 1,3-Dichlorobenzene	541-73-1	1	µg/L	<1	20 µg/L	81.6	78	112	
EP074-WF: 1,4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	20 µg/L	89.6	78	116	
EP074-WF: 1,2-Dichlorobenzene	95-50-1	1	µg/L	<1	20 µg/L	89.0	83	113	
EP074-WF: 1,2,4-Trichlorobenzene	120-82-1	1	µg/L	<1	20 µg/L	82.8	68	112	
EP074-WF: 1,2,3-Trichlorobenzene	87-61-6	1	µg/L	<1	20 µg/L	89.1	78	116	
EP074G: Trihalomethanes (QCLot: 461082)									
EP074-WF: Chloroform	67-66-3	1	µg/L	<1	20 µg/L	92.6	83	115	
EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	20 µg/L	88.2	75	112	
EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	20 µg/L	88.2	68	108	
EP074-WF: Bromoform	75-25-2	1	µg/L	<1	20 µg/L	85.1	62	106	
EP074G: Trihalomethanes (QCLot: 461084)									
EP074-WF: Chloroform	67-66-3	1	µg/L	<1	20 µg/L	108	83	115	
EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	20 µg/L	108	75	112	
EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	20 µg/L	97.9	68	108	
EP074-WF: Bromoform	75-25-2	1	µg/L	<1	20 µg/L	95.0	62	106	
EP074G: Trihalomethanes (QCLot: 462550)									
EP074-WF: Chloroform	67-66-3	1	µg/L	<1	20 µg/L	97.7	83	115	
EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	20 µg/L	95.2	75	112	
EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	20 µg/L	83.1	68	108	
EP074-WF: Bromoform	75-25-2	1	µg/L	<1	20 µg/L	78.6	62	106	
EP074H: Naphthalene (QCLot: 461082)									
EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	95.4	82	116	
EP074H: Naphthalene (QCLot: 461084)									
EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	99.8	82	116	
EP074H: Naphthalene (QCLot: 462550)									
EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	90.9	82	116	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 461188)									
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	61.7	39	115	
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	52.7	40	124	
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	65.6	46	120	
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	62.0	47	125	
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	67.6	55	125	
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	63.7	53	127	
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	68.6	56	130	
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	68.8	56	132	
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	72.9	52	136	



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	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 461188) - continued									
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	80.5	54	132	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	69.2	48	142	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	66.4	54	134	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	65.6	55	133	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	67.2	49	143	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	70.5	52	142	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	65.6	52	142	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 461191)									
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	71.6	39	115	
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	78.9	40	124	
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	84.8	46	120	
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	82.3	47	125	
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	80.9	55	125	
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	82.6	53	127	
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	83.4	56	130	
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	84.4	56	132	
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	81.1	52	136	
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	83.9	54	132	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	75.5	48	142	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	94.9	54	134	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	85.6	55	133	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	82.7	49	143	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	82.3	52	142	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	83.2	52	142	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 462679)									
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	84.4	39	115	
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	91.3	40	124	
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	94.0	46	120	
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	87.2	47	125	
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	88.4	55	125	
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	89.6	53	127	
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	89.0	56	130	
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	89.9	56	132	
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	88.0	52	136	
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	89.8	54	132	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	80.0	48	142	



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	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 462679) - continued									
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	98.2	54	134	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	88.1	55	133	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	85.4	49	143	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	85.0	52	142	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	85.5	52	142	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 461081)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	92.3	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 461083)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	102	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 461085)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	88.4	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 461189)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	99.0	53	123	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	99.7	57	133	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	107	55	141	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 461190)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	88.8	53	123	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	94.7	57	133	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	95.6	55	141	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 462549)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	98.6	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 462555)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	84.9	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 462678)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	91.2	53	123	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	100	57	133	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	95.2	55	141	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 461081)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	89.6	65	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 461083)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	94.0	65	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 461085)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	83.8	65	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 461189)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	105	54	122	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	100.0	56	132	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	109	51	137	



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	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 461190)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	89.6	54	122	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	98.7	56	132	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	87.0	51	137	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 462549)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	97.0	65	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 462555)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	82.9	65	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 462678)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	92.2	54	122	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	99.6	56	132	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	90.7	51	137	
EP080: BTEXN (QCLot: 461081)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	89.8	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.4	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	93.0	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	93.7	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	91.9	75	127	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	125	71	129	
EP080: BTEXN (QCLot: 461083)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	99.9	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	99.4	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	92.8	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	93.7	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	98.5	75	127	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	94.9	71	129	
EP080: BTEXN (QCLot: 461085)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	89.9	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	92.9	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	94.5	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	99.8	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	100	75	127	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	101	71	129	
EP080: BTEXN (QCLot: 462549)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	96.5	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	102	76	124	



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	
EP080: BTEXN (QCLot: 462549) - continued									
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	100	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	101	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	103	75	127	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	120	71	129	
EP080: BTEXN (QCLot: 462555)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	96.6	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	93.2	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	87.7	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	89.6	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	90.9	75	127	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	91.8	71	129	

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	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 461403)								
EM1605737-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 461409)								
EM1605749-016	GW19	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 462855)								
EM1605749-047	GW10	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 465801)								
EM1605749-002	GW03	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	90.6	70	130	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 465802)								
EM1605749-022	GW26	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	95.4	70	130	
ED045G: Chloride by Discrete Analyser (QCLot: 461404)								
EM1605737-002	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	72.6	70	130	
ED045G: Chloride by Discrete Analyser (QCLot: 461408)								



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED045G: Chloride by Discrete Analyser (QCLot: 461408) - continued							
EM1605749-016	GW19	ED045G: Chloride	16887-00-6	400 mg/L	# Not Determined	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 462854)							
EM1605749-047	GW10	ED045G: Chloride	16887-00-6	400 mg/L	110	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 460678)							
EM1605749-001	GW01	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	96.1	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	102	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	94.2	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	96.0	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	99.9	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	102	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	103	73	131
EG020A-F: Zinc	7440-66-6	0.2 mg/L	93.3	75	131		
EG020F: Dissolved Metals by ICP-MS (QCLot: 460682)							
EM1605749-021	GW25	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	102	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	98.3	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	97.2	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	94.8	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	95.2	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	91.2	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	106	73	131
EG020A-F: Zinc	7440-66-6	0.2 mg/L	91.5	75	131		
EG020F: Dissolved Metals by ICP-MS (QCLot: 462965)							
EM1605749-046	GW02	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	96.1	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	107	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	93.4	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	95.5	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	91.7	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	96.8	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	95.5	73	131
EG020A-F: Zinc	7440-66-6	0.2 mg/L	104	75	131		
EG020T: Total Metals by ICP-MS (QCLot: 461800)							
EM1605604-007	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	92.0	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	95.0	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	92.8	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	90.3	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	93.3	83	121
		EG020A-T: Nickel	7440-02-0	1 mg/L	88.3	80	118



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 461800) - continued							
EM1605604-007	Anonymous	EG020A-T: Zinc	7440-66-6	1 mg/L	91.3	74	116
EG035F: Dissolved Mercury by FIMS (QCLot: 460680)							
EM1605749-002	GW03	EG035F: Mercury	7439-97-6	0.01 mg/L	91.5	70	120
EG035F: Dissolved Mercury by FIMS (QCLot: 460681)							
EM1605749-022	GW26	EG035F: Mercury	7439-97-6	0.01 mg/L	94.2	70	120
EG035F: Dissolved Mercury by FIMS (QCLot: 462964)							
EM1605749-047	GW10	EG035F: Mercury	7439-97-6	0.01 mg/L	101	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 464534)							
EM1605686-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	91.8	70	130
EK040P: Fluoride by PC Titrator (QCLot: 461706)							
EM1605604-004	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	86.0	70	130
EK040P: Fluoride by PC Titrator (QCLot: 461710)							
EM1605749-012	GW15	EK040P: Fluoride	16984-48-8	5 mg/L	79.2	70	130
EK040P: Fluoride by PC Titrator (QCLot: 461713)							
EM1605749-032	GW38	EK040P: Fluoride	16984-48-8	5 mg/L	113	70	130
EK040P: Fluoride by PC Titrator (QCLot: 463107)							
EM1605737-008	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	94.2	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 461776)							
EM1605749-002	GW03	EK055G: Ammonia as N	7664-41-7	1 mg/L	106	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 461778)							
EM1605749-022	GW26	EK055G: Ammonia as N	7664-41-7	1 mg/L	88.8	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 463074)							
EM1605749-047	GW10	EK055G: Ammonia as N	7664-41-7	1 mg/L	86.3	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 461405)							
EM1605737-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	88.9	80	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 461410)							
EM1605749-022	GW26	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	91.1	80	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 462856)							
EM1605749-047	GW10	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	91.7	80	114
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 461406)							
EM1605749-002	GW03	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	93.6	79	123
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 461411)							
EM1605749-022	GW26	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	94.8	79	123



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 462853)							
EM1605749-047	GW10	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	100	79	123
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 461082)							
EM1605749-004	GW05	EP074-WF: Benzene	71-43-2	20 µg/L	94.1	76	128
		EP074-WF: Toluene	108-88-3	20 µg/L	108	72	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 461084)							
EM1605749-022	GW26	EP074-WF: Benzene	71-43-2	20 µg/L	110	76	128
		EP074-WF: Toluene	108-88-3	20 µg/L	105	72	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 462550)							
EM1605749-049	GW23	EP074-WF: Benzene	71-43-2	20 µg/L	97.5	76	128
		EP074-WF: Toluene	108-88-3	20 µg/L	103	72	132
EP074E: Halogenated Aliphatic Compounds (QCLot: 461082)							
EM1605749-004	GW05	EP074-WF: 1,1-Dichloroethene	75-35-4	20 µg/L	91.7	63	129
		EP074-WF: Trichloroethene	79-01-6	20 µg/L	90.8	64	126
EP074E: Halogenated Aliphatic Compounds (QCLot: 461084)							
EM1605749-022	GW26	EP074-WF: 1,1-Dichloroethene	75-35-4	20 µg/L	104	63	129
		EP074-WF: Trichloroethene	79-01-6	20 µg/L	112	64	126
EP074E: Halogenated Aliphatic Compounds (QCLot: 462550)							
EM1605749-049	GW23	EP074-WF: 1,1-Dichloroethene	75-35-4	20 µg/L	95.9	63	129
		EP074-WF: Trichloroethene	79-01-6	20 µg/L	99.7	64	126
EP074F: Halogenated Aromatic Compounds (QCLot: 461082)							
EM1605749-004	GW05	EP074-WF: Chlorobenzene	108-90-7	20 µg/L	103	81	119
EP074F: Halogenated Aromatic Compounds (QCLot: 461084)							
EM1605749-022	GW26	EP074-WF: Chlorobenzene	108-90-7	20 µg/L	99.7	81	119
EP074F: Halogenated Aromatic Compounds (QCLot: 462550)							
EM1605749-049	GW23	EP074-WF: Chlorobenzene	108-90-7	20 µg/L	102	81	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 461081)							
EM1605749-004	GW05	EP080: C6 - C9 Fraction	----	280 µg/L	79.8	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 461083)							
EM1605749-022	GW26	EP080: C6 - C9 Fraction	----	280 µg/L	72.9	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 461085)							
EM1605749-030	GW36	EP080: C6 - C9 Fraction	----	280 µg/L	85.1	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 462549)							
EM1605749-049	GW23	EP080: C6 - C9 Fraction	----	280 µg/L	77.9	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 462555)							



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 462555) - continued							
EM1605604-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	78.0	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 461081)							
EM1605749-004	GW05	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	72.8	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 461083)							
EM1605749-022	GW26	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	67.0	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 461085)							
EM1605749-030	GW36	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	80.3	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 462549)							
EM1605749-049	GW23	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	72.8	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 462555)							
EM1605604-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	73.8	44	122
EP080: BTEXN (QCLot: 461081)							
EM1605749-004	GW05	EP080: Benzene	71-43-2	20 µg/L	94.5	68	130
		EP080: Toluene	108-88-3	20 µg/L	106	72	132
EP080: BTEXN (QCLot: 461083)							
EM1605749-022	GW26	EP080: Benzene	71-43-2	20 µg/L	113	68	130
		EP080: Toluene	108-88-3	20 µg/L	104	72	132
EP080: BTEXN (QCLot: 461085)							
EM1605749-030	GW36	EP080: Benzene	71-43-2	20 µg/L	100	68	130
		EP080: Toluene	108-88-3	20 µg/L	106	72	132
EP080: BTEXN (QCLot: 462549)							
EM1605749-049	GW23	EP080: Benzene	71-43-2	20 µg/L	99.8	68	130
		EP080: Toluene	108-88-3	20 µg/L	99.4	72	132
EP080: BTEXN (QCLot: 462555)							
EM1605604-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	105	68	130
		EP080: Toluene	108-88-3	20 µg/L	102	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1605749	Page	: 1 of 25
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60431087 1.4	Date Samples Received	: 19-May-2016
Site	: ----	Issue Date	: 30-May-2016
Sampler	: ZACHARY OCONNOR	No. of samples received	: 53
Order number	: 60431087, 1.4	No. of samples analysed	: 52

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

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
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EM1605737--002	Anonymous	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EM1605749--016	GW19	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EM1605749--047	GW10	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
ED045G: Chloride by Discrete Analyser	EM1605749--016	GW19	Chloride	16887-00-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

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
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
GW06, GW12, GW26	GW11, GW25,	----	----	----	23-May-2016	16-May-2016	7
Clear Plastic Bottle - Natural							
GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	----	----	----	23-May-2016	17-May-2016	6
Clear Plastic Bottle - Natural							
GW15, GW19, GW24, GW30, GW32	GW18, GW22, GW28, GW31,	----	----	----	23-May-2016	18-May-2016	5



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
EA005P: pH by PC Titrator - Analysis Holding Time Compliance						
Clear Plastic Bottle - Natural GW02, GW13, GW27, GW10, GW23, GW29	----	----	----	24-May-2016	18-May-2016	6
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural GW06, GW12, GW26, GW11, GW25	----	----	----	20-May-2016	18-May-2016	2
Clear Plastic Bottle - Natural GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01, GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	----	----	----	20-May-2016	19-May-2016	1
EK071G: Reactive Phosphorus as P by discrete analyser						
Clear Plastic Bottle - Natural GW06, GW12, GW26, GW11, GW25	----	----	----	20-May-2016	18-May-2016	2
Clear Plastic Bottle - Natural GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01, GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	----	----	----	20-May-2016	19-May-2016	1

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	



Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	45	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	57	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	45	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	57	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

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

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

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

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) GW06, GW12, GW26 GW11, GW25	16-May-2016	----	----	----	23-May-2016	16-May-2016	✖
Clear Plastic Bottle - Natural (EA005-P) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01 GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	----	----	----	23-May-2016	17-May-2016	✖
Clear Plastic Bottle - Natural (EA005-P) GW15, GW19, GW24, GW30, GW32 GW18, GW22, GW28, GW31	18-May-2016	----	----	----	23-May-2016	18-May-2016	✖
Clear Plastic Bottle - Natural (EA005-P)							



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	
EA005P: pH by PC Titrator - Continued								
GW02, GW13, GW27,	GW10, GW23, GW29	18-May-2016	----	----	----	24-May-2016	18-May-2016	*
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H)								
GW06, GW12, GW26	GW11, GW25,	16-May-2016	----	----	----	23-May-2016	23-May-2016	✓
Clear Plastic Bottle - Natural (EA015H)								
GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	----	----	----	23-May-2016	24-May-2016	✓
Clear Plastic Bottle - Natural (EA015H)								
GW15, GW19, GW24, GW30, GW32	GW18, GW22, GW28, GW31,	18-May-2016	----	----	----	23-May-2016	25-May-2016	✓
Clear Plastic Bottle - Natural (EA015H)								
GW02, GW13, GW27,	GW10, GW23, GW29	18-May-2016	----	----	----	25-May-2016	25-May-2016	✓



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	
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P) GW06, GW12, GW26	GW11, GW25,	16-May-2016	----	----	----	23-May-2016	30-May-2016	✓
Clear Plastic Bottle - Natural (ED037-P) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	----	----	----	23-May-2016	31-May-2016	✓
Clear Plastic Bottle - Natural (ED037-P) GW15, GW19, GW24, GW30, GW32	GW18, GW22, GW28, GW31,	18-May-2016	----	----	----	23-May-2016	01-Jun-2016	✓
Clear Plastic Bottle - Natural (ED037-P) GW02, GW13, GW27,	GW10, GW23, GW29	18-May-2016	----	----	----	24-May-2016	01-Jun-2016	✓



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	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) GW06, GW12, GW26	GW11, GW25,	16-May-2016	----	----	----	24-May-2016	13-Jun-2016	✓
Clear Plastic Bottle - Natural (ED041G) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	----	----	----	24-May-2016	14-Jun-2016	✓
Clear Plastic Bottle - Natural (ED041G) GW15, GW19, GW24, GW30, GW32	GW18, GW22, GW28, GW31,	18-May-2016	----	----	----	24-May-2016	15-Jun-2016	✓
Clear Plastic Bottle - Natural (ED041G) GW02, GW13, GW27,	GW10, GW23, GW29	18-May-2016	----	----	----	25-May-2016	15-Jun-2016	✓



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	
ED043: Total Oxidised Sulfur as SO4 2-								
Clear Plastic Bottle - Natural (ED043) GW06, GW12, GW26	GW11, GW25,	16-May-2016	27-May-2016	13-Jun-2016	✓	27-May-2016	13-Jun-2016	✓
Clear Plastic Bottle - Natural (ED043) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	27-May-2016	14-Jun-2016	✓	27-May-2016	14-Jun-2016	✓
Clear Plastic Bottle - Natural (ED043) GW15, GW19, GW24, GW30, GW32, GW10, GW23, GW29	GW18, GW22, GW28, GW31, GW02, GW13, GW27,	18-May-2016	27-May-2016	15-Jun-2016	✓	27-May-2016	15-Jun-2016	✓



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	
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) GW06, GW12, GW26	GW11, GW25,	16-May-2016	----	----	----	24-May-2016	13-Jun-2016	✓
Clear Plastic Bottle - Natural (ED045G) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	----	----	----	24-May-2016	14-Jun-2016	✓
Clear Plastic Bottle - Natural (ED045G) GW15, GW19, GW24, GW30, GW32	GW18, GW22, GW28, GW31,	18-May-2016	----	----	----	24-May-2016	15-Jun-2016	✓
Clear Plastic Bottle - Natural (ED045G) GW02, GW13, GW27,	GW10, GW23, GW29	18-May-2016	----	----	----	25-May-2016	15-Jun-2016	✓



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	
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW06, GW12, GW26	GW11, GW25,	16-May-2016	----	----	----	23-May-2016	13-Jun-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	----	----	----	23-May-2016	14-Jun-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW15, GW19, GW24, GW30, GW32	GW18, GW22, GW28, GW31,	18-May-2016	----	----	----	23-May-2016	15-Jun-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW02, GW13, GW27,	GW10, GW23, GW29	18-May-2016	----	----	----	26-May-2016	15-Jun-2016	✓



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	
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW06, GW12, GW26	GW11, GW25,	16-May-2016	----	----	----	23-May-2016	12-Nov-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	----	----	----	23-May-2016	13-Nov-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW15, GW19, GW24, GW30, GW32	GW18, GW22, GW28, GW31,	18-May-2016	----	----	----	23-May-2016	14-Nov-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW02, GW13, GW27, QCA2,	GW10, GW23, GW29, QCB2	18-May-2016	----	----	----	24-May-2016	14-Nov-2016	✓
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) QCA,	QCB	16-May-2016	23-May-2016	12-Nov-2016	✓	23-May-2016	12-Nov-2016	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) QCA1,	QCB1	17-May-2016	23-May-2016	13-Nov-2016	✓	23-May-2016	13-Nov-2016	✓



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	
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW06, GW12, GW26	GW11, GW25,	16-May-2016	----	----	----	26-May-2016	13-Jun-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	----	----	----	26-May-2016	14-Jun-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW02, GW13, GW27, QCA2,	GW10, GW23, GW29, QCB2	18-May-2016	----	----	----	25-May-2016	15-Jun-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW15, GW19, GW24, GW30, GW32	GW18, GW22, GW28, GW31,	18-May-2016	----	----	----	26-May-2016	15-Jun-2016	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) QCA,	QCB	16-May-2016	----	----	----	25-May-2016	13-Jun-2016	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) QCA1,	QCB1	17-May-2016	----	----	----	25-May-2016	14-Jun-2016	✓



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	
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) GW06, GW12, GW26	GW11, GW25,	16-May-2016	----	----	----	23-May-2016	13-Jun-2016	✓
Clear Plastic Bottle - Natural (EK040P) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	----	----	----	23-May-2016	14-Jun-2016	✓
Clear Plastic Bottle - Natural (EK040P) GW15, GW19, GW24, GW30, GW32	GW18, GW22, GW28, GW31,	18-May-2016	----	----	----	23-May-2016	15-Jun-2016	✓
Clear Plastic Bottle - Natural (EK040P) GW02, GW13, GW27,	GW10, GW23, GW29	18-May-2016	----	----	----	24-May-2016	15-Jun-2016	✓



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	
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW06, GW12, GW26	GW11, GW25,	16-May-2016	----	----	----	24-May-2016	13-Jun-2016	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	----	----	----	24-May-2016	14-Jun-2016	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW15, GW19, GW24, GW30, GW32	GW18, GW22, GW28, GW31,	18-May-2016	----	----	----	24-May-2016	15-Jun-2016	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW02, GW13, GW27,	GW10, GW23, GW29	18-May-2016	----	----	----	25-May-2016	15-Jun-2016	✓



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	
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) GW06, GW12, GW26	GW11, GW25,	16-May-2016	----	----	----	20-May-2016	18-May-2016	*
Clear Plastic Bottle - Natural (EK057G) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	----	----	----	20-May-2016	19-May-2016	*
Clear Plastic Bottle - Natural (EK057G) GW15, GW19, GW24, GW30, GW32, GW10, GW23, GW29	GW18, GW22, GW28, GW31, GW02, GW13, GW27,	18-May-2016	----	----	----	20-May-2016	20-May-2016	✓



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	
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) GW06, GW12, GW26	GW11, GW25,	16-May-2016	----	----	----	20-May-2016	18-May-2016	✘
Clear Plastic Bottle - Natural (EK071G) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	----	----	----	20-May-2016	19-May-2016	✘
Clear Plastic Bottle - Natural (EK071G) GW15, GW19, GW24, GW30, GW32, GW10, GW23, GW29	GW18, GW22, GW28, GW31, GW02, GW13, GW27,	18-May-2016	----	----	----	20-May-2016	20-May-2016	✔



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	
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) GW06, GW12, GW26, QCB	GW11, GW25, QCA,	16-May-2016	23-May-2016	23-May-2016	✓	25-May-2016	02-Jul-2016	✓
Amber Glass Bottle - Unpreserved (EP071) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01, QCA1,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03, QCB1	17-May-2016	23-May-2016	24-May-2016	✓	25-May-2016	02-Jul-2016	✓
Amber Glass Bottle - Unpreserved (EP071) GW15, GW19, GW24, GW30, GW32	GW18, GW22, GW28, GW31,	18-May-2016	23-May-2016	25-May-2016	✓	25-May-2016	02-Jul-2016	✓
Amber Glass Bottle - Unpreserved (EP071) GW02, GW13, GW27, QCA2,	GW10, GW23, GW29, QCB2	18-May-2016	24-May-2016	25-May-2016	✓	25-May-2016	03-Jul-2016	✓



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	
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW06,	GW11	16-May-2016	23-May-2016	30-May-2016	✓	23-May-2016	30-May-2016	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW25,	GW26	16-May-2016	23-May-2016	30-May-2016	✓	24-May-2016	30-May-2016	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW03, GW07, GW09, GW20	GW05, GW08, GW17,	17-May-2016	23-May-2016	31-May-2016	✓	23-May-2016	31-May-2016	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW33, GW35,	GW34, GW37	17-May-2016	23-May-2016	31-May-2016	✓	24-May-2016	31-May-2016	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW15, GW22	GW19,	18-May-2016	23-May-2016	01-Jun-2016	✓	23-May-2016	01-Jun-2016	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW30, GW32	GW31,	18-May-2016	23-May-2016	01-Jun-2016	✓	24-May-2016	01-Jun-2016	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW13, GW29	GW23,	18-May-2016	24-May-2016	01-Jun-2016	✓	24-May-2016	01-Jun-2016	✓



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	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) GW06, GW12, GW26	GW11, GW25,	16-May-2016	23-May-2016	23-May-2016	✓	25-May-2016	02-Jul-2016	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) GW01, GW04, GW07, GW09, GW16, GW20, GW33, GW35, GW37, QC01,	GW03, GW05, GW08, GW14, GW17, GW21, GW34, GW36, GW38, QC03	17-May-2016	23-May-2016	24-May-2016	✓	25-May-2016	02-Jul-2016	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) GW15, GW19, GW24, GW30, GW32	GW18, GW22, GW28, GW31,	18-May-2016	23-May-2016	25-May-2016	✓	25-May-2016	02-Jul-2016	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) GW02, GW13, GW27,	GW10, GW23, GW29	18-May-2016	24-May-2016	25-May-2016	✓	25-May-2016	03-Jul-2016	✓



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	
EP080/071: Total Petroleum Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP080) GW06, GW12	GW11,	16-May-2016	23-May-2016	30-May-2016	✓	23-May-2016	30-May-2016	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW25, QCA,	GW26, QCB	16-May-2016	23-May-2016	30-May-2016	✓	24-May-2016	30-May-2016	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW01, GW04, GW07, GW09, GW16, GW20,	GW03, GW05, GW08, GW14, GW17, GW21	17-May-2016	23-May-2016	31-May-2016	✓	23-May-2016	31-May-2016	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW33, GW35, GW37, QC01, QCA1,	GW34, GW36, GW38, QC03, QCB1	17-May-2016	23-May-2016	31-May-2016	✓	24-May-2016	31-May-2016	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW15, GW19, GW24	GW18, GW22,	18-May-2016	23-May-2016	01-Jun-2016	✓	23-May-2016	01-Jun-2016	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW28, GW31,	GW30, GW32	18-May-2016	23-May-2016	01-Jun-2016	✓	24-May-2016	01-Jun-2016	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW13, GW29	GW23,	18-May-2016	24-May-2016	01-Jun-2016	✓	24-May-2016	01-Jun-2016	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW02, GW27, QCB2	GW10, QCA2,	18-May-2016	24-May-2016	01-Jun-2016	✓	25-May-2016	01-Jun-2016	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB01, TB03, TB05,	TB02, TB04, TB06	19-May-2016	23-May-2016	02-Jun-2016	✓	24-May-2016	02-Jun-2016	✓



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(were) 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	Reaural	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	8	80	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	6	54	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	8	78	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	6	55	10.91	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	45	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	8	80	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	5	40	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	8	80	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	57	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	8	67	11.94	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	4	24	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	4	80	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	3	54	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	4	78	5.13	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	55	5.45	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	3	45	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	3	40	7.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	8	80	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	57	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



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	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
TRH Volatiles/BTEX	EP080	5	67	7.46	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	3	24	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	3	54	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	4	78	5.13	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	55	5.45	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	3	45	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	3	40	7.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	80	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	57	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	5	67	7.46	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	3	24	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	3	54	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	4	78	5.13	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	45	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	3	40	7.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	57	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	5	67	7.46	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	3	24	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard



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	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 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 (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 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 (2013) Schedule B(3)
Total Oxidised Sulfur as SO4 2-	ED043	WATER	In house: The sample is treated with Peroxide to convert all Sulfur species to Sulfate. Sulfate in the sample can then be determined by ICPAES and reported as TOS as SO4 2-.
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm 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	In house: Referenced to APHA 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
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(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 ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 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 (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to 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 the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds WF Detection Limits	EP074-WF	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to 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 the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
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<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Oxidisable Sulfur as SO4 2- Prep	ED043-PR	WATER	In house
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

COC Melbourne

From: Graeme Jablonskas
Sent: Friday, 20 May 2016 9:41 AM
To: COC Melbourne
Subject: FW: COC for Fishermans Bend Samples
Attachments: RE: COC for Fishermans Bend Samples

Updated Analysis – see email attached

Regards,

Graeme Jablonskas

Senior Project Manager
ALS Environmental Division

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[EnviroMail™ 00 – Summary of all EnviroMails™ by Category](#)

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From: Graeme Jablonskas
Sent: Friday, 20 May 2016 9:29 AM
To: COC Melbourne
Subject: FW: COC for Fishermans Bend Samples

See attached and below.

Regards,

Graeme Jablonskas

Senior Project Manager
ALS Environmental Division

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From: O'Connor, Zachary [<mailto:Zachary.OConnor@aecom.com>]

Sent: Friday, 20 May 2016 9:17 AM

To: Carol Walsh

Cc: Graeme Jablonskas; Coyne, Averyll

Subject: COC for Fishermans Bend Samples

Hi Carol and Graeme,

Please see attached COC for Fishermans Bend samples sent to ALS yesterday.

Please contact me if any further info is required.

Zach.

Zach O'Connor

Graduate Environmental Engineer

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Graeme Jablonskas

From: O'Connor, Zachary <Zachary.OConnor@aecom.com>
Sent: Friday, 20 May 2016 10:06 AM
To: Graeme Jablonskas
Subject: RE: COC for Fishermans Bend Samples

You will likely find two sets for GW21 – we accidentally both sampled it! Please use the set sampled by TH.

The other set can remain on hold.

Thanks.

Zach O'Connor
Graduate Environmental Engineer
D +61 3 9653 8016
Zachary.OConnor@aecom.com

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From: Graeme Jablonskas [mailto:Graeme.Jablonskas@alsglobal.com]
Sent: Friday, 20 May 2016 9:40 AM
To: O'Connor, Zachary
Subject: RE: COC for Fishermans Bend Samples

Got it

Regards,

Graeme Jablonskas

Senior Project Manager
ALS | Environmental Division

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Analysis received at 9.41 AM on 20/5



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- Melbourne: 24 Westall Rd. Springvale VIC 3171. Ph: 03 8549 0600 E: samples@als.com.au
- Perth: 10 Hedley Way. Melaka WA 6050. Ph: 08 9209 7555 E: samples@als.com.au
- Newcastle: 5 Rosegum Rd. Warabrook NSW 2304. Ph: 02 4968 9433 E: samples@als.com.au
- Townsville: 14-15 Desha St. Blythe QLD 4816. Ph: 07 4796 0600 E: samples@als.com.au
- Adelaide: 2-11 St. Pymbla SA 5096. Ph: 08 8360 9899 E: samples@als.com.au
- Launceston: 27 Wellington St. Launceston TAS 7250. Ph: 03 6351 2159 E: samples@als.com.au

CLIENT: AECOM		TURNAROUND REQUIREMENTS:			FOR LABORATORY USE ONLY (Circle)		
OFFICE: <u>L9 8 Exhibition St. MELBOURNE</u>		Standard PAT may be longer for some tests e.g., Ultra Trace Organics)			Custody Seal Intact? Yes No N/A		
PROJECT: Fishermans Bend		ALS QUOTE NO.: ME/199/16		COC SEQUENCE NUMBER (Circle)			Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: <u>60431087, 1.4</u>		CONTACT PH: <u>9657 8072</u>		COC (1) 2 3 4 5 7			Random Sample Temperature on Receipt: °C
PROJECT MANAGER: <u>Averyll Coyne</u>		CONTACT PH: <u>9657 8072</u>		OF: 1 2 3 4 (5) 7			Other comment:
SAMPLER: <u>Z. O'Connor</u>		SAMPLER MOBILE: <u>0400 001 270</u>		RELINQUISHED BY: <u>Z. O'Connor</u>		RECEIVED BY:	
COC emailed to ALS? (YES/NO)		EDD FORMAT (or default):		DATE/TIME: <u>19/05/16</u>		DATE/TIME:	
Email Reports to: <u>averyll.coyne@aecom.com, zachary.oconnor@aecom.com</u>		Email Invoice to: <u>Average</u>		DATE/TIME:		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)	CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) <small>Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)</small>	Additional Information															
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <small>(refer to codes below)</small>	TOTAL BOTTLES	IONIC BALANCE SUITE <small>(includes pH, TDS, Ca, Mg, Na, K, Alk, SO4, Cl, F, NH3, RP, NO2, NO3)</small>	W2-F - Dissolved (field filtered) 8 metals	additional Metals - Al, Fe, Se, Mn	ED043 - TOS	EK059 - NOX	EP074A-G (WF) VOC Scan	W7 - TPH / BTEX / PAH	W-18 TPH C6-C9/BTEX (Tripblank)	W5-T - 8 total metals, TPH/BTEX (Rinsate)					
1	GW01	17/05/16	W	500mL green: 60mL purple plastic; 60mL red metals (field filtered): 2x40mL amber VOC Vials, 100mL amber glass -orange	6	X	X	X	X	X	X	X	X	X	X				
N-R	GW02	18/05/16			6	X	X	X	X	X	X	X	X	X	X	X			
2	GW03	17/05/16			6	X	X	X	X	X	X	X	X	X	X	X			
3	GW04	17/05/16			6	X	X	X	X	X	X	X	X	X	X	X			
4	GW05	17/05/16			6	X	X	X	X	X	X	X	X	X	X	X			
5	GW06	16/05/16			6	X	X	X	X	X	X	X	X	X	X	X			
6	GW07	17/05/16			6	X	X	X	X	X	X	X	X	X	X	X			
7	GW08	17/05/16			6	X	X	X	X	X	X	X	X	X	X	X			
8	GW09	17/05/16			6	X	X	X	X	X	X	X	X	X	X	X			
N-R	GW10	18/05/16			6	X	X	X	X	X	X	X	X	X	X	X			
9	GW11	11/05/16			6	X	X	X	X	X	X	X	X	X	X	X			
10	GW12	16/05/16			6	X	X	X	X	X	X	X	X	X	X	X			

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



CHAIN OF CUSTODY

ALS Laboratory, phase tick →

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Ph: 07 3243 7222 E: samples.brisbane@alsenviro.com

□ Melbourne 2-41 Westall Rd, Sunnyside VIC 3171
Ph: 03 8549 9900 E: samples.melbourne@alsenviro.com

□ Perth 10 Hood Way, Malaga WA 6060
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□ Newcastle 5 Rosegum Rd, Warabrook NSW 2304
Ph: 02 5688 9433 E: samples.newcastle@alsenviro.com

□ Townsville 14-15 Dyma Ct, Bohle QLD 4811
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□ Adelaide 2-1 Pyrama Rd, Pooraka SA 5000
Ph: 08 8358 0890 E: adelaide@alsenviro.com

□ Launceston 27 Wellington St, Launceston TAS 7250
Ph: 01 6321 2158 E: launceston@alsenviro.com

CLIENT: AECOM		TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		FOR LABORATORY USE ONLY (Circle)		
OFFICE: L9, 8 Exhibition St		ALS QUOTE NO.: ME/199/16		Custody Seal Intact? Yes No N/A		
PROJECT: Fishermans Bend		COC SEQUENCE NUMBER (Circle)		Free ice / frozen ice bricks present upon receipt? Yes No N/A		
ORDER NUMBER: 60431087, 1-4		COC 1 2 3 4 5 7		Random Sample Temperature on Receipt: °C		
PROJECT MANAGER: AVERYL COYNE		CONTACT PH: 9653 8072		Other comment:		
SAMPLER: Z. O'CONNOR		SAMPLER MOBILE: 0400 001 270		RECEIVED BY:		RECEIVED BY:
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME:		DATE/TIME:
Email Reports to: Averyl.coyne@aecom.com, z.averyl.oconnor@aecom.com		RELINQUISHED BY: Z. O'CONNOR		DATE/TIME: 18/05/16		
Email Invoice to: AVERYL		DATE/TIME:		DATE/TIME:		DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

LAB USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).										Additional Information
	LAB ID	SAMPLE ID	DATE / TIME		MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	IONIC BALANCE SUITE (includes pH, TDS, Ca, Mg, Na, K, Alk, SO4, Cl, F, NH3, RP, NO2, NO3)	W2-F - Dissolved(field filtered) 8 metals	additional Metals - Al, Fe, Se, Mn	ED043 - TOS	EK059 - NOx	EP074A-G (WF) VOC Scan	W7 - TPH / BTEX / PAH	
N.R.	GW13	18/05/16	W	500mL green; 60mL purple plastic; 60mL red metals (field filtered); 2x40mL amber VOC Vials, 100mL amber glass - orange	6	X	X	X	X	X	X	X	X		
11	GW14	17/05/16			6	X	X	X	X	X	X	X	X		
12	GW15	18/05/16			6	X	X	X	X	X	X	X	X		
13	GW16	17/05/16			6	X	X	X	X	X	X	X	X		
14	GW17	17/05/16			6	X	X	X	X	X	X	X	X		
15	GW18	18/05/16			6	X	X	X	X	X	X	X	X		
16	GW19	18/05/16			6	X	X	X	X	X	X	X	X		
17	GW20	17/05/16			6	X	X	X	X	X	X	X	X		
18	GW21	17/05/16			6	X	X	X	X	X	X	X	X		
19	GW22	18/05/16			6	X	X	X	X	X	X	X	X		
N.R.	GW23	18/05/16		6	X	X	X	X	X	X	X	X			
20	GW24	18/05/16		6	X	X	X	X	X	X	X	X			

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



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 Launceston 27 Franklin St. Launceston TAS 7250
 Ph: 03 6331 2158 E: launceston@als.com.au

CLIENT: AECOM		TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)			FOR LABORATORY USE ONLY (Circle)			
OFFICE: L9, 8 EXHIBITION ST.		ALS QUOTE NO.: ME199/16			COC SEQUENCE NUMBER (Circle)			
PROJECT: Fishermans Bend		COC 1 2 3 4 5 7			COC 1 2 3 4 5 7			
ORDER NUMBER: 60431087, 14		CONTACT PH: 9653 8072			Free Ice / frozen ice bricks present upon receipt? Yes No N/A			
PROJECT MANAGER: Averyll Coyne		SAMPLER MOBILE: 0400 001 270			Random Sample Temperature on Receipt: °C			
SAMPLER: Zach O'Connor		RELINQUISHED BY: Z. O'Connor			Other comment:			
COC emailed to ALS? (YES/NO)		RECEIVED BY:			RECEIVED BY:			
Email Reports to: Averyll + Zach		DATE/TIME: 19/05/16			DATE/TIME:			
Email Invoice to: Averyll		DATE/TIME:			DATE/TIME:			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) <small>Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).</small>										Additional Information			
	LAB ID	SAMPLE ID	DATE / TIME		MATRIX	TYPE & PRESERVATIVE <small>(refer to codes below)</small>	TOTAL BOTTLES	IONIC BALANCE SUITE <small>(includes pH, TDS, Ca, Mg, Na, K, Alk, SO4, Cl, F, NH3, RP, NO2, NO3)</small>	W2-F - Dissolved (field filtered) 8 metals	additional Metals - Al, Fe, Se, Mn	ED043 - TOS	EK059 - NOx	EP074A-G (WF) VOC Scan	W7 - TPH / BTEX / PAH	W-18 TPH C6-C9/BTEX (Tripblank)	W5-T - 8 total metals, TPH/BTEX (Rinsate)		
	21	GW25	16/05/16	W	500mL green; 60mL purple plastic; 60mL red metals (field filtered); 2x40mL amber VOC Vials, 100mL amber glass - orange	6	X	X	X	X	X	X	X			X		
	22	GW26	16/05/16			6	X	X	X	X	X	X	X			X		
	N.R	GW27	18/05/16			6	X	X	X	X	X		X			X		
	23	GW28	18/05/16			6	X	X	X	X	X		X			X		
	N.R	GW29	18/05/16			6	X	X	X	X	X	X	X			X		
	24	GW30	18/05/16			6	X	X	X	X	X	X	X			X		
	25	GW31	18/05/16			6	X	X	X	X	X	X	X			X		
	26	GW32	18/05/16			6	X	X	X	X	X	X	X			X		
	27	GW33	17/05/16			6	X	X	X	X	X	X	X			X		
	28	GW34				6	X	X	X	X	X	X	X			X		
	29	GW35			6	X	X	X	X	X	X	X			X			
	30	GW36			6	X	X	X	X	X	X	X			X			

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 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solts; B = Unpreserved Bag



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Ph: 03 8542 9620 E: samples.melbourne@alsenviro.com

Perth: 10 Hed Way. Malaga WA 6090
Ph: 08 9109 7555 E: samples.perth@alsenviro.com

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Launceston: 27 Wellington St. Launceston TAS 7250
Ph: 03 6331 3155 E: launceston@alsenviro.com

CLIENT: AECOM		TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)			FOR LABORATORY USE ONLY (Circle)		
OFFICE: L9, 8 Exhibition St.	ALS QUOTE NO.: ME198/16			COC SEQUENCE NUMBER (Circle)			
PROJECT: Fishermans Bend	COC 1 2 3 4 5 7			Custody Seal Intact? Yes No N/A			
ORDER NUMBER: 60431087, 1.4	CONTACT PH: 9653 8072			Free Ice / Frozen Ice blocks present upon receipt? Yes No N/A			
PROJECT MANAGER: Averyll Coyne	SAMPLER MOBILE: 0400 001 270			Random Sample Temperature on Receipt: °C			
SAMPLER: Z. O'Connor	RELINQUISHED BY: Z. O'Connor			Other comment:			
COC emailed to ALS? (YES/NO)	EDD FORMAT (or default):			RECEIVED BY:			
Email Reports to: Averyll + Zach	DATE/TIME: 19/05/16			RECEIVED BY:			
Email Invoice to: Averyll	DATE/TIME:			RECEIVED BY:			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

LAB USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (acid filtered bottle required)										Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	IONIC BALANCE SUITE (includes pH, TDS, Ca, Mg, Na, K, Alk, SO4, Cl, F, NH3, RP, NO2, NO3)	W2-F - Dissolved (field filtered) 8 metals	additional Metals - Al, Fe, Se, Mn	ED043 - TOS	EK059 - NOx	EP074A-G (WF) VOC Scan	W7 - TPH / BTEX / PAH	W-18 TPH C6-C9/BTEX (Trip/blank)	W5-T - 8 total metals, TPH/BTEX (Rinse)	pH, TDS	
31	GW37	17/05/16	W	500ml plastic green, 60mL red metals bottle (field filtered), 60mL purple plastic, 2x40mL amber VOC vials, 100mL amber glass-orange	6	X	X	X	X	X	X	X				
32	GW38	17/05/16			6	X	X	X	X	X	X					
33	QC01	17/05/16		DUPLICATE - bottles as above	6	X	X	X	X	X	X			X		
34	QC03	17/05/16		DUPLICATE - bottles as above	6	X	X	X	X	X	X			X		
35	TB01	19/05/16		tripblank vial	1							X				
36	TB02			tripblank vial	1							X				
37	TB03			tripblank vial	1							X				
38	TB04			tripblank vial	1							X				
39	QCA	16/05/16		Rinse	4								X			
40	QCB	16/05/16		Rinse	4								X			
41	QCA1	17/05/16		Rinse	4								X			
42	QCA B1	17/05/16		Rinse	4								X			

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Od Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial RG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Solids; B = Unpreserved Bag

Appendix D

Results Summary Tables

		BTEX								Chlorinated Hydrocarbons																										
		Benzene	Ethylbenzene	Toluene	Total BTEX	Xylene (m & p)	Xylene (o)	Xylene Total	C6-C10 less BTEX (F1)	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichloromethane	Hexachlorobutadiene	Trichloroethene	Tetrachloroethene	
		µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		1	1	1	0.001	1	1	2	0.01	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	1	1	1	1	2	0.5	1	1	
Maintenance of Ecosystems	ANZECC 2000 Marine 90% ANZECC 2000 Low Reliability Value Dutch 2009 Intervention Value Dutch 1989	900	5	180		350					270	400	5800	250	900				1900	1200	1400					240		370		0.8		4000	0.03	400	100	
Potable Water Supply	ADWG 2011 Aesthetic ADWG 2011 Health WHO 2011 USEPA RSLs November 2015		3	25			20								30				3	5				250		3	250		250	60	100		4	0.7		50
Agriculture, Parks and Gardens	ANZECC 2000 LTV									5.7	8000	0.76	0.41	28			0.0075	0.0033			370						2100				8.3					
Stock Watering	ANZECC 2000 Stock water ADWG 2011 Health WHO 2011 USEPA RSLs November 2015	1	300	800			600							30					3	5				250		3	250		250	60	100		4	0.7		50
Primary Contact Recreation	NHMRC 2008 Aesthetic NHMRC 2008 Health (x10 inorganics) WHO 2011 USEPA RSLs November 2015	1	3	25			20							30					3	5				250		3	250		250	60	100		4	0.7		50
Buildings and Structures	AS2159									5.7	8000	0.76	0.41	28			0.0075	0.0033			370						2100				8.3					
Vapour Intrusion	NEPM 2013 >2-4m, Sand	800	NL	NL			NL	1																												

Field ID	Date	Lab Report Number	Sample Type	Benzene	Ethylbenzene	Toluene	Total BTEX	Xylene (m & p)	Xylene (o)	Xylene Total	C6-C10 less BTEX (F1)	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichloromethane	Hexachlorobutadiene	Trichloroethene	Tetrachloroethene	
GW29	18/11/2015	EM1517312 / EM1517502	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GW29	18/05/2016	EM1605749	Normal	<1	<2	<2	<0.001	<2	<2	<2	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<2	<1	<5	<1	<1	<1	
GW30	18/11/2015	EM1517312 / EM1517502	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GW30	18/05/2016	EM1605749	Normal	<1	<2	<2	<0.001	<2	<2	<2	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<2	<1	<5	<1	<1	<1	
GW31	17/11/2015	EM1517153 / EM1517384	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GW31	18/05/2016	EM1605749	Normal	<1	<2	<2	<0.001	<2	<2	<2	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<2	<1	<5	<1	<1	<1	<1	
GW32	19/11/2015	EM1517384	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GW32	18/05/2016	EM1605749	Normal	170	271	5	0.475	23	6	29	0.4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<2	<1	<5	<1	<1	<1		
GW33	16/11/2015	EM1517153 / EM1517384	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GW33	17/05/2016	EM1605749	Normal	<1	<2	<2	<0.001	<2	<2	<2	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<2	<1	<5	<1	<1	<1	
GW34	16/11/2015	EM1517153 / EM1517384	Normal	<1	<2	<2	<0.001	<2	<2	<2	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GW34	17/05/2016	EM1605749	Normal	<1	<2	<2	<0.001	<2	<2	<2	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<2	<1	<5	<1	<1	<1		
GW35	17/11/2015	EM1517153 / EM1517387	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GW35	17/05/2016	EM1605749	Normal	<1	<2	<2	<0.001	<2	<2	<2	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<2	<1	<5	<1	<1	<1		
GW36	16/11/2015	EM1517153	Normal	<1	<1	<1	<0.001	<1	<1	<2	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<2	<1	<5	<1	<1	<1		
GW36	17/05/2016	EM1605749	Normal	<1	<2	<2	<0.001	<2	<2	<2	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GW37	16/11/2015	EM1517153 / EM1517384	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GW37	17/05/2016	EM1605749	Normal	<1	<2	<2	<0.001	<2	<2	<2	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<2	<1	<5	<1	<1	<1		
GW38	17/11/2015	EM1517153	Normal	<1	<1	<1	<0.001	<1	<1	<2	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<2	<1	<5	<1	<1	<1		
GW38	17/05/2016	EM1605749	Normal	<1	<2	<2	<0.001	<2	<2	<2	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Notes:
a Adjusted for average laboratory pH of 7.1
b Long term trigger value for total nitrogen
c 90% grading value from Hickey (2013)
d Cr(VI) low reliability value
e Odour threshold conservatively adopted (converted from 1.5 mg/L ammonia as NH3)
f C. Osmer, EPA Victoria (1990) Report on Overseas Visit May 1989 Clean-Up of Chemically Contaminated Sites.

EQI	Total Oxidised Sulfur as SO4 2-	MAH												Metals																	
		Sodium (Filtered)	TDS	TOC	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Calcium (Filtered)	Chromium (III+VI) (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Magnesium (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Potassium (Filtered)	Selenium (Filtered)	Zinc (Filtered)	Acenaphthene	Acenaphthylene	Anthracene
	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	
Maintenance of Ecosystems	ANZECC 2000 Marine 90% ANZECC 2000 Low Reliability Value Dutch 2009 Intervention Value Dutch 1989									30			0.0005	0.0045	0.0014		0.0044 ^d		0.003	0.3	0.0066	0.08	0.0007	0.2			0.003	0.023			1.5
Potable Water Supply	ADWG 2011 Aesthetic ADWG 2011 Health WHO 2011 USEPA RSLs November 2015	180	600										0.2						1			0.1								3	
Agriculture, Parks and Gardens	ANZECC 2000 LTV	115			15	120	450	1000	660			2000	690	5	0.1	0.01		0.1	0.2	14	2	0.2	0.002	0.2		0.02	2	530	1800		
Stock Watering	ANZECC 2000 Stock water ADWG 2011 Health WHO 2011 USEPA RSLs November 2015													5	0.5	0.01	1000	0.5	0.5 (sheep)		0.1		0.5	0.002	1		0.02	20			
Primary Contact Recreation	NHMRC 2008 Aesthetic NHMRC 2008 Health (x10 inorganics) WHO 2011 USEPA RSLs November 2015	180	600										0.2	0.1	0.02		0.5	1	0.3	0.1	0.1	0.1	0.2			0.1	3	530	1800		
Buildings and Structures	AS2159																														
Vapour Intrusion	NEPM 2013 >2-4m, Sand																														

Field ID	Date	Lab Report Number	Sample Type	Total Oxidised Sulfur as SO4 2-	Sodium (Filtered)	TDS	TOC	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Calcium (Filtered)	Chromium (III+VI) (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Magnesium (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Potassium (Filtered)	Selenium (Filtered)	Zinc (Filtered)	Acenaphthene	Acenaphthylene	Anthracene
GW01	20/11/2015	EM1517387	Normal	12	740	2960	52	2	<1	1	<1	<1	<1	<1	<1	<1	0.01	0.003	<0.0001	42	0.005	<0.001	7.57	<0.001	92	0.04	<0.0001	0.028	162	<0.01	0.009	<1	<1	<1
GW01	17/05/2016	EM1605749	Normal	38	846	2780	-	-	-	-	-	-	-	-	-	-	<0.01	0.003	<0.0001	32	0.005	<0.001	5.18	<0.001	83	0.035	<0.0001	0.021	197	<0.01	0.006	<1	<1	<1
GW02	20/11/2015	EM1517387	Normal	19	443	1910	40	<1	<1	3	<1	3	2	<1	<1	<1	<0.01	0.003	<0.0001	69	0.004	<0.001	73.6	<0.001	81	0.092	<0.0001	0.052	44	<0.01	<0.005	<1	<1	<1
GW02	18/05/2016	EM1605749	Normal	6	441	1770	-	-	-	-	-	-	-	-	-	-	<0.01	0.004	<0.0001	70	0.005	<0.001	70.5	<0.001	76	0.07	<0.0001	0.042	42	<0.01	0.014	<1	<1	<1
GW03	19/11/2015	EM1517384	Normal	236	143	1390	-	-	-	-	-	-	-	-	-	-	0.04	0.007	<0.0001	176	<0.001	<0.001	6.85	<0.001	94	0.475	<0.0001	0.014	41	<0.01	0.029	<1	<1	<1
GW03	17/05/2016	EM1605749	Normal	212	159	1400	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.01	0.009	<0.0001	171	<0.001	<0.001	8.32	<0.001	100	0.519	<0.0001	0.007	43	<0.01	0.007	<1	<1	<1
GW04	19/11/2015	EM1517384	Normal	209	46	787	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.04	0.002	<0.0001	174	<0.001	0.002	0.25	<0.001	41	0.098	<0.0001	0.042	12	<0.01	0.09	<1	<1	<1
GW04	17/05/2016	EM1605749	Normal	270	50	1120	-	-	-	-	-	-	-	-	-	-	<0.01	0.003	<0.0001	212	<0.001	0.001	0.53	<0.001	47	0.192	<0.0001	0.028	14	<0.01	0.027	<1	<1	<1
GW05	18/11/2015	EM1517312 / EM1517387	Normal	19	208	1330	17	-	-	-	-	-	-	-	-	-	<0.01	0.001	<0.0001	87	<0.001	<0.001	2.24	<0.001	98	0.264	<0.0001	0.009	50	<0.01	0.015	<1	<1	<1
GW05	17/05/2016	EM1605749	Normal	167	217	1250	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.01	0.01	<0.0001	100	<0.001	<0.001	72.3	0.002	106	0.402	<0.0001	0.008	55	<0.01	0.021	<1	<1	<1
GW06	20/11/2015	EM1517387	Normal	371	214	1550	35	-	-	-	-	-	-	-	-	-	0.03	0.05	<0.0001	252	0.002	<0.001	35.6	<0.001	76	0.671	<0.0001	0.011	39	<0.01	0.014	<1	<1	<1
GW06	16/05/2016	EM1605749	Normal	1010	501	3360	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.04	0.013	<0.0001	427	0.002	0.012	5.39	<0.001	136	0.489	<0.0001	0.036	74	<0.01	0.032	<1	<1	<1
GW07	19/11/2015	EM1517384	Normal	106	123	1250	-	-	-	-	-	-	-	-	-	-	0.06	0.021	<0.0001	212	0.002	<0.001	9.95	<0.001	52	0.15	<0.0001	0.006	28	<0.01	0.01	<1	<1	<1
GW07	17/05/2016	EM1605749	Normal	123	147	1370	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.03	0.015	<0.0001	237	0.002	<0.001	8.19	0.003	49	0.137	<0.0001	0.009	31	<0.01	0.014	<1	<1	<1
GW08	19/11/2015	EM1517384	Normal	310	46	996	-	-	-	-	-	-	-	-	-	-	0.06	0.003	<0.0001	209	0.001	<0.001	2.65	<0.001	29	0.253	<0.0001	0.009	15	<0.01	0.009	<1	<1	<1
GW08	17/05/2016	EM1605749	Normal	362	50	1020	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.02	0.003	<0.0001	209	0.001	<0.001	7.35	<0.001	30	0.196	<0.0001	0.018	17	<0.01	<0.005	<1	<1	<1
GW09	19/11/2015	EM1517384	Normal	478	149	1240	-	-	-	-	-	-	-	-	-	-	0.03	0.001	<0.0001	203	<0.001	<0.001	20	<0.001	36	0.346	<0.0001	0.06	25	<0.01	0.016	<1	<1	<1
GW09	17/05/2016	EM1605749	Normal	386	134	1160	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.01	<0.001	<0.0001	186	<0.001	<0.001	14.6	<0.001	32	0.318	<0.0001	0.016	24	<0.01	<0.005	<1	<1	<1
GW10	18/11/2015	EM1517312	Normal	156	58	642	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.02	0.007	<0.0001	83	0.002	0.002	4.92	<0.001	27	0.066	<0.0001	0.009	10	<0.01	0.062	<1	<1	<1
GW10	18/05/2016	EM1605749	Normal	149	47	557	-	-	-	-	-	-	-	-	-	-	0.04	0.014	<0.0001	74	0.002	0.002	4.17	0.001	24	0.041	<0.0001	0.016	9	<0.01	0.04	<1	<1	<1
GW11	19/11/2015	EM1517384	Normal	212	111	632	-	-	-	-	-	-	-	-	-	-	0.05	0.009	<0.0001	62	0.001	<0.001	1.08	<0.001	4	0.073	<0.0001	0.007	10	<0.01	0.006	<1	<1	<1
GW11	16/05/2016	EM1605749	Normal	123	38	456	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.02	0.006	<0.0001	101	<0.001	<0.001	1.08	<0.001	6	0.077	<0.0001	0.016	9	<0.01	0.012	<1	<1	<1
GW12	19/11/2015	EM1517384	Normal	466	115	1380	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.03	0.012	<0.0001	262	<0.001	<0.001	2.81	<0.001	36	0.113	<0.0001	0.008	25	<0.01	0.015	<1	<1	<1
GW12	16/05/2016	EM1605749	Normal	389	95	1170	-	-	-	-	-	-	-	-	-	-	<0.01	0.009	<0.0001	228	<0.001	0.002	1.2	<0.001	29	0.06	<0.0001	0.027	20	<0.01	0.021	<1	<1	<1
GW13	18/11/2015	EM1517312 / EM1517387	Normal	172	54	751	6	-	-	-	-	-	-	-	-	-	0.03	0.004	<0.0001	111	<0.001	0.002	0.83	0.001	29	0.082	<0.0001	0.02	12	<0.01	0.028	<1	<1	<1
GW13	18/05/2016	EM1605749	Normal	133	50	612	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.03	0.007	<0.0001	94	<0.001	<0.001	0.85	<0.001	24	0.076	<0.0001	0.015	12	<0.01	0.013	<1	<1	<1
GW14	17/11/2015	EM1517312	Normal	18	16	336	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.06	0.005	<0.0001	24	<0.001	0.002	0.05	<0.001	4	0.002	<0.0001	0.054	3	<0.01	0.02	<1	<1	<1
GW14	17/05/2016	EM1605749	Normal	13	13	331	-	-	-	-	-	-	-	-	-	-	<0.01	0.004	<0.0001	25	<0.001	0.001	<0.05	<0.001	4	0.001	<0.000							

		MAH													Metals																				
		Total Oxidised Sulfur as SO4 2-	Sodium (Filtered)	TDS	TOC	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Calcium (Filtered)	Chromium (III+VI) (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Magnesium (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Potassium (Filtered)	Selenium (Filtered)	Zinc (Filtered)	Acenaphthene	Acenaphthylene	Anthracene			
		mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
EQL		1	1	5	1	1	1	1	1	1	1	1	1	0.01	0.001	0.0001	1	0.001	0.001	0.01	0.001	1	0.001	0.00005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	1	1	1	
Maintenance of Ecosystems	ANZECC 2000 Marine 90% ANZECC 2000 Low Reliability Value Dutch 2009 Intervention Value Dutch 1989 ^f							30						0.0005	0.0045	0.0014		0.0044 ^d		0.003		0.0066		0.0007	0.2			0.003						1.5	
Potable Water Supply	ADWG 2011 Aesthetic ADWG 2011 Health WHO 2011 USEPA RSLs November 2015	180	600									4		0.2					1				0.1									3			
Agriculture, Parks and Gardens	ANZECC 2000 LTV	115				15	120	450	1000	660			2000	5	0.1	0.01		0.1	0.2	14	2		0.2	0.002	0.2		0.02	2				530	1800		
Stock Watering	ANZECC 2000 Stock water ADWG 2011 Health WHO 2011 USEPA RSLs November 2015											30		5	0.5	0.01	1000	0.5	0.5 (sheep)		0.1		0.5	0.002	1		0.02	20							
Primary Contact Recreation	NHMRC 2008 Aesthetic NHMRC 2008 Health (x10 inorganics) WHO 2011 USEPA RSLs November 2015	180	600			15	120	450	1000	660		2000	690						14													530	1800		
Buildings and Structures	AS2159																																		
Vapour Intrusion	NEPM 2013 >2-4m, Sand																																		

Field ID	Date	Lab Report Number	Sample Type	Total Oxidised Sulfur as SO4 2-	Sodium (Filtered)	TDS	TOC	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Calcium (Filtered)	Chromium (III+VI) (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Magnesium (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Potassium (Filtered)	Selenium (Filtered)	Zinc (Filtered)	Acenaphthene	Acenaphthylene	Anthracene
GW29	18/11/2015	EM1517312 / EM1517502	Normal	238	105	1060	14	-	-	-	-	-	-	-	-	-	0.03	0.006	<0.0001	176	<0.001	<0.001	5.54	<0.001	28	0.108	<0.0001	0.012	10	<0.01	0.01	<1	<1	<1
GW29	18/05/2016	EM1605749	Normal	217	92	978	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.01	0.006	<0.0001	176	<0.001	0.001	6.34	<0.001	29	0.056	<0.0001	0.075	12	<0.01	0.018	<1	<1	<1
GW30	18/11/2015	EM1517312 / EM1517502	Normal	701	64	1170	14	-	-	-	-	-	-	-	-	-	0.21	0.007	<0.0001	143	0.012	<0.001	50.6	<0.001	29	0.25	<0.0001	0.029	9	<0.01	0.054	<1	<1	<1
GW30	18/05/2016	EM1605749	Normal	1110	59	1760	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	12.5	0.01	0.0016	179	0.059	0.006	110	0.006	34	0.647	<0.0001	0.541	9	<0.01	0.349	<1	<1	<1
GW31	17/11/2015	EM1517153 / EM1517384	Normal	1380	1620	6860	15	-	-	-	-	-	-	-	-	-	<0.01	0.003	<0.0001	496	<0.001	<0.001	49.8	<0.001	259	0.61	<0.0001	0.024	81	<0.01	0.016	<1	<1	<1
GW31	18/05/2016	EM1605749	Normal	1540	1110	7510	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.01	0.007	<0.0001	797	0.001	<0.001	56.6	<0.001	384	0.464	<0.0001	0.038	99	<0.01	0.013	<1	<1	<1
GW32	19/11/2015	EM1517384	Normal	1020	2230	9950	-	-	-	-	-	-	-	-	-	-	<0.01	<0.001	<0.0001	845	<0.001	<0.001	0.2	<0.001	273	3.29	<0.0001	<0.001	54	<0.01	0.006	-	-	-
GW32	18/05/2016	EM1605749	Normal	1490	2090	9780	-	9	1	17	1	6	<1	<1	<1	<1	<0.01	<0.001	<0.0001	836	<0.001	<0.001	0.31	<0.001	313	3.34	<0.0001	<0.001	51	<0.01	0.006	128	<1	<1
GW33	16/11/2015	EM1517153 / EM1517384	Normal	<10	55	837	8	-	-	-	-	-	-	-	-	-	0.01	0.015	<0.0001	133	<0.001	0.001	21.7	0.002	72	0.359	<0.0001	0.004	23	<0.01	0.013	<1	<1	<1
GW33	17/05/2016	EM1605749	Normal	8	63	1050	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.01	0.014	<0.0001	139	<0.001	<0.001	16.9	<0.001	70	0.286	<0.0001	0.013	24	<0.01	<0.005	<1	<1	<1
GW34	16/11/2015	EM1517153 / EM1517384	Normal	238	627	2760	6	-	-	-	-	-	-	-	-	-	0.01	0.003	<0.0001	87	0.005	<0.001	0.18	<0.001	95	0.083	<0.0001	0.009	44	<0.01	<0.005	<1	<1	<1
GW34	17/05/2016	EM1605749	Normal	223	551	2220	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.01	0.002	<0.0001	87	<0.001	<0.001	0.52	<0.001	90	0.109	<0.0001	0.009	44	<0.01	<0.005	<1	<1	<1
GW35	17/11/2015	EM1517153 / EM1517387	Normal	2200	401	3760	26	-	-	-	-	-	-	-	-	-	<0.01	0.002	<0.0001	510	<0.001	<0.001	16.6	<0.001	192	1.3	<0.0001	0.087	41	<0.01	0.007	<1	<1	<1
GW35	17/05/2016	EM1605749	Normal	2200	332	3540	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.01	0.007	<0.0001	491	0.002	<0.001	16.8	<0.001	203	1.39	<0.0001	0.027	41	<0.01	0.006	<1	<1	<1
GW36	16/11/2015	EM1517153	Normal	63	108	724	50	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.03	0.004	<0.0001	52	0.001	<0.001	6.53	0.011	38	0.548	<0.0001	0.013	22	<0.01	0.02	<1	<1	<1
GW36	17/05/2016	EM1605749	Normal	151	172	1190	-	-	-	-	-	-	-	-	-	-	0.03	0.004	<0.0001	91	0.001	<0.001	11.2	<0.001	47	0.641	<0.0001	0.018	24	<0.01	0.037	<1	<1	<1
GW37	16/11/2015	EM1517153 / EM1517384	Normal	-	248	914	4	-	-	-	-	-	-	-	-	-	0.02	0.002	<0.0001	14	<0.001	0.002	<0.05	<0.001	22	0.109	<0.0001	0.014	24	<0.01	0.014	<1	<1	<1
GW37	17/05/2016	EM1605749	Normal	113	202	839	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.03	0.003	<0.0001	30	<0.001	0.001	0.05	<0.001	37	0.27	<0.0001	0.077	30	<0.01	0.011	<1	<1	<1
GW38	17/11/2015	EM1517153	Normal	1030	1250	3680	9	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.01	0.004	<0.0001	8	<0.001	0.004	<0.05	<0.001	24	0.042	<0.0001	0.026	25	<0.01	<0.005	<1	<1	<1
GW38	17/05/2016	EM1605749	Normal	1060	1300	3360	-	-	-	-	-	-	-	-	-	-	0.01	0.003	<0.0001	9	<0.001	0.002	<0.05	<0.001	27	0.046	<0.0001	0.026	26	<0.01	0.007	<1	<1	<1

Notes:
a Adjusted for average laboratory pH of 7.1
b Long term trigger value for total nitrogen
c 90% grading value from Hickey (2013)
d Cr(VI) low reliability value
e Odour threshold conservatively adopted (converted from 1.5 mg/L ammonia as N)
f C. Osmer, EPA Victoria (1990) Report on Overseas Visit May 1989 Clean-Up of

		PAH											Solvents						TPH										VOCs								
		Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(b,j)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Pyrene	2-hexanone (MBK)	Methyl Ethyl Ketone	4-Methyl-2-pentanone	Acetone	Carbon disulfide	Vinyl acetate	F2-NAPHTHALENE	+C10 - C36 (Sum of total)	C6 - C9	C10 - C14	C15 - C28	C29-C36	C10 - C40 (Sum of total)	C10-C16	C16-C34	C34-C40	C6-C10	cis-1,4-Dichloro-2-butene	Pentachloroethane	trans-1,4-Dichloro-2-butene		
		µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
EQL		1	0.5	1	0.001	1	1	1	1	1	1	0.5	1	1	10	10	10	0.01	1	10	0.05	50	10	50	100	50	100	0.05	0.1	0.1	0.1	0.01	1	1	1		
Maintenance of Ecosystems	ANZECC 2000 Marine 90% ANZECC 2000 Low Reliability Value Dutch 2009 Intervention Value Dutch 1989 ^f		0.4						1		90		4						20			600				600								80			
Potable Water Supply	ADWG 2011 Aesthetic ADWG 2011 Health WHO 2011 USEPA RSLs November 2015		0.01																				150														
Agriculture, Parks and Gardens	ANZECC 2000 LTV																																	0.013	0.65	0.013	
Stock Watering	ANZECC 2000 Stock water ADWG 2011 Health WHO 2011 USEPA RSLs November 2015		0.01																																0.013	0.65	0.013
Primary Contact Recreation	NHMRC 2008 Aesthetic NHMRC 2008 Health (x10 inorganics) WHO 2011 USEPA RSLs November 2015		0.01																																0.013	0.65	0.013
Buildings and Structures	AS2159																																				
Vapour Intrusion	NEPM 2013 >2-4m, Sand																				1																

Field ID	Date	Lab Report Number	Sample Type	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(b,j)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Pyrene	2-hexanone (MBK)	Methyl Ethyl Ketone	4-Methyl-2-pentanone	Acetone	Carbon disulfide	Vinyl acetate	F2-NAPHTHALENE	+C10 - C36 (Sum of total)	C6 - C9	C10 - C14	C15 - C28	C29-C36	C10 - C40 (Sum of total)	C10-C16	C16-C34	C34-C40	C6-C10	cis-1,4-Dichloro-2-butene	Pentachloroethane	trans-1,4-Dichloro-2-butene	
GW29	18/11/2015	EM1517312 / EM1517502	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	-	-	-	-	-	-	-	50	-	50	<100	<50	<100	<0.1	<0.1	<0.1	-	-	-	-	
GW29	18/05/2016	EM1605749	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<0.01	<1	<10	<0.1	<50	<20	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	<1	<1	<1	
GW30	18/11/2015	EM1517312 / EM1517502	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	-	-	-	-	-	-	-	250	-	50	200	<50	220	<0.1	0.22	<0.1	-	-	-	-	
GW30	18/05/2016	EM1605749	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<0.01	<1	<10	<0.1	<50	<20	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	<1	<1	<1	
GW31	17/11/2015	EM1517153 / EM1517384	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	-	-	-	-	-	-	-	<50	-	<50	<100	<50	<100	<0.1	<0.1	<0.1	-	-	-	-	
GW31	18/05/2016	EM1605749	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<0.01	<1	<10	<0.1	<50	<20	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	<1	<1	<1	
GW32	19/11/2015	EM1517384	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
GW32	18/05/2016	EM1605749	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	26.2	<1	27	188	6.8	<1	<10	<10	<10	<0.01	3	<10	4.16	5670	930	3540	2130	<50	5230	4.18	1.05	<0.1	0.88	<1	<1	<1	
GW33	16/11/2015	EM1517153 / EM1517384	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	-	-	-	-	-	-	-	<50	-	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	<1	<1	<1	
GW33	17/05/2016	EM1605749	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<0.01	<1	<10	<0.1	<50	<20	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	<1	<1	<1	
GW34	16/11/2015	EM1517153 / EM1517384	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	-	-	-	-	-	-	-	<0.1	<50	<20	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	-	-	-
GW34	17/05/2016	EM1605749	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<0.01	1	<10	<0.1	<50	<20	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	<1	<1	<1	
GW35	17/11/2015	EM1517153 / EM1517387	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	-	-	-	-	-	-	-	110	-	<50	110	<50	100	<0.1	0.1	<0.1	-	-	-	-	
GW35	17/05/2016	EM1605749	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<0.01	<1	<10	<0.1	<50	<20	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	<1	<1	<1	
GW36	16/11/2015	EM1517153	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<0.01	<1	<10	<0.1	<50	<20	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	<1	<1	<1	
GW36	17/05/2016	EM1605749	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	-	-	-	-	-	-	-	<0.1	<50	<20	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	-	-	-
GW37	16/11/2015	EM1517153 / EM1517384	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	-	-	-	-	-	-	-	<50	-	<50	<100	<50	<100	<0.1	<0.1	<0.1	-	-	-	-	
GW37	17/05/2016	EM1605749	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<0.01	<1	<10	<0.1	<50	<20	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	<1	<1	<1	
GW38	17/11/2015	EM1517153	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<0.01	<1	<10	<0.1	<50	<20	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	<1	<1	<1	
GW38	17/05/2016	EM1605749	Normal	<1	<0.5	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	-	-	-	-	-	-	-	<0.1	<50	<20	<50	<100	<50	<100	<0.1	<0.1	<0.1	<0.02	-	-	-

Notes:
a Adjusted for average laboratory pH of 7.1
b Long term trigger value for total nitrogen
c 90% grading value from Hickey (2013)
d Cr(VI) low reliability value
e Odour threshold conservatively adopted (converted from 1.5 mg/L ammonia as N)
f C. Osmer, EPA Victoria (1990) Report on Overseas Visit May 1989 Clean-Up of

Appendix E

Data Validation

Data Validation

The Quality Assurance and Quality Control (QA/QC) processes implemented by AECOM were conducted in general accordance with EPA Publication 669 (Groundwater Sampling Guidelines) (EPA, 2000), Industrial Waste Guidelines, Publication IWRG701 (Sampling and Analysis of Waters, Wastewaters, Soils and Wastes) (EPA, 2009), NEPM (as amended 2013) and Australian Standards (AS4482.1).

As per the NEPM 1999 (as amended 2013), Quality Assurance is the '*planned and systematic activities implemented within a quality system*' necessary to provide the confidence that a dataset will meet the quality objectives. Quality Control is the '*operational techniques and activities*' necessary to ensure a dataset will meet the quality objectives. The NEPM provides guidance on both field QA/QC procedures and laboratory QA/QC procedures. Data Quality Indicators (DQIs), including completeness, comparability, representativeness, precision and accuracy, assess the reliability and effectiveness of field and laboratory QA/QC procedures implemented during an investigation.

Field QA/QC

The AECOM Sampling and Analysis Quality Plan (2015) outlined the procedures for groundwater monitoring well gauging and sampling, and field quality control sampling and analysis during GME1. The 2016 GME2 was also performed in accordance with the SAQP.

Appendix E summarises the field considerations used to assess the field QA/QC procedures implemented as part of this assessment.

Laboratory QA/QC

Routine quality assurance practices are used by the laboratories during analysis to ensure the accuracy and reliability of analytical results. The adequacy of the laboratory quality assurance practices is measured by field and laboratory quality control procedures.

Appendix E summarises the controls used to measure and assess the laboratory QA/QC procedures implemented during this baseline groundwater assessment.

Data Validation Summary

The QA/QC assessment process is used to assess and document the usability of the data and whether the data are suitable as a basis for interpretation. Data sets are assessed for completeness, comparability, representativeness, precision and accuracy against field specific and laboratory-specific QA/QC requirements.

The review of field and laboratory QA/QC results, as provided in **Appendix E**, indicated that the reported analytical data are representative of shallow groundwater quality at the sample locations and the data are adequately reliable for the intended purposes.

QA/QC Sample ID	Date Sampled	QA/QC Sample Type	Matrix	Laboratory	Analysis Requested
QC01	18/11/2015	Primary Duplicate - GW21	WATER	ALS	pH, TDS, TOC; Dissolved Metals; Ammonia as N, Ca, Mg, Na, K, Cl, SO ₄ , Alkalinity; Minor Anions; 8 Metals; TRH(C6-C40)/PAH/BTEXN
QC02	18/11/2015	Secondary Duplicate - GW21	WATER	EnviroLab	pH, TDS, TOC; Ca, Mg, Na, K, Cl, SO ₄ , Alkalinity, Ammonia as N, Reactive P, Nitrite as N, Nitrate as N plus Nox, F; Metals: As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Al, Fe, Se, Mn; TOS as SO ₄ ; TRH(C6-C40)/PAH; VOC Scan including BTEXN
QC03	18/11/2015	Primary Duplicate - GW27	WATER	ALS	pH, TDS, TOC; Dissolved Metals; Ammonia as N, Ca, Mg, Na, K, Cl, SO ₄ , Alkalinity; Minor Anions; 8 Metals; TRH(C6-C40)/PAH/BTEXN
QC04	18/11/2015	Secondary Duplicate - GW27	WATER	EnviroLab	pH, TDS, TOC; Ca, Mg, Na, K, Cl, SO ₄ , Alkalinity, Ammonia as N, Reactive P, Nitrite as N, Nitrate as N plus Nox, F; Metals: As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Al, Fe, Se, Mn; TOS as SO ₄ ; TRH(C6-C40)/PAH; VOC Scan including BTEXN
QC05	20/11/2015	Primary Duplicate - GW35	WATER	ALS	pH, TDS, TOC; Dissolved Metals; Ammonia as N, Ca, Mg, Na, K, Cl, SO ₄ , Alkalinity; Minor Anions; 8 Metals; TRH(C6-C40)/PAH/BTEXN
QC06	20/11/2015	Secondary Duplicate - GW35	WATER	EnviroLab	pH, TDS, TOC; Ca, Mg, Na, K, Cl, SO ₄ , Alkalinity, Ammonia as N, Reactive P, Nitrite as N, Nitrate as N plus Nox, F; Metals: As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Al, Fe, Se, Mn; TOS as SO ₄ ;
QCA	16/11/2015	Rinsate	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCB	16/11/2015	Rinsate	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCC	16/11/2015	Trip Blank	WATER	ALS	TPH (C6-C9), BTEXN
QCD	16/11/2015	Field Method Blank	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCE	17/11/2015	Field Method Blank	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCF	17/11/2015	Rinsate	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCG	17/11/2015	Rinsate	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCH	17/11/2015	Trip Blank	WATER	ALS	TPH (C6-C9), BTEXN
QCI	18/11/2015	Field Method Blank	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCJ	18/11/2015	Rinsate	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCK	23/11/2015	Rinsate	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCL	23/11/2015	Field Method Blank	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCM	19/11/2015	Trip Blank	WATER	ALS	TPH (C6-C9), BTEXN
QCN	20/11/2015	Rinsate	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCO	20/11/2015	Field Method Blank	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCP	20/11/2015	Trip Blank	WATER	ALS	TPH (C6-C9), BTEXN
QCQ	19/11/2015	Rinsate	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCR	19/11/2015	Field Method Blank	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCA	16/05/2016	Rinsate	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCB	16/05/2016	Rinsate	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCA1	16/05/2016	Rinsate	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QCB1	16/05/2016	Rinsate	WATER	ALS	Metals, TRH (C6-C40), BTEXN
QC01	16/05/2016	Primary Duplicate - GW33	WATER	ALS	pH, TDS Ca, Mg, Na, K, Cl, SO ₄ , Alkalinity, Ammonia as N, Reactive P, Nitrite as N, Nitrate as N plus Nox, F; Metals: As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Al, Fe, Se, Mn; TOS as SO ₄ ; TRH(C6-C40)/BTEX/PAH

QA/QC Sample ID	Date Sampled	QA/QC Sample Type	Matrix	Laboratory	Analysis Requested
QC02	16/05/2016	Secondary Duplicate - GW33	WATER	Envirolab	pH, TDS Ca, Mg, Na, K, Cl, SO4, Alkalinity, Ammonia as N, Reactive P, Nitrite as N, Nitrate as N plus Nox, F; Metals: As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Al, Fe, Se, Mn; TOS as SO4; TRH(C6-C40)/BTEX/PAH
QC03	16/05/2016	Primary Duplicate - GW09	WATER	ALS	pH, TDS Ca, Mg, Na, K, Cl, SO4, Alkalinity, Ammonia as N, Reactive P, Nitrite as N, Nitrate as N plus Nox, F; Metals: As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Al, Fe, Se, Mn; TOS as SO4; TRH(C6-C40)/BTEX/PAH
QC04	16/05/2016	Secondary Duplicate - GW09	WATER	Envirolab	pH, TDS Ca, Mg, Na, K, Cl, SO4, Alkalinity, Ammonia as N, Reactive P, Nitrite as N, Nitrate as N plus Nox, F; Metals: As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Al, Fe, Se, Mn; TOS as SO4; TRH(C6-C40)/BTEX/PAH
QCB2	16/05/2016	Trip Blank	WATER	ALS	TPH (C6-C9), BTEXN
TB01	16/05/2016	Trip Blank	WATER	ALS	TPH (C6-C9), BTEXN
TB02	16/05/2016	Trip Blank	WATER	ALS	TPH (C6-C9), BTEXN
TB03	16/05/2016	Trip Blank	WATER	ALS	TPH (C6-C9), BTEXN
TB04	16/05/2016	Trip Blank	WATER	ALS	TPH (C6-C9), BTEXN
TB05	16/05/2016	Trip Blank	WATER	ALS	TPH (C6-C9), BTEXN
TB06	16/05/2016	Trip Blank	WATER	ALS	TPH (C6-C9), BTEXN

QA/QC Item	Data Quality Indicators	Acceptability Limits	Source Guidance Document	Pass?	Applicable DQO	Comments
Field Calibration	All equipment/ instrumentation has been calibrated prior to use in the field.	Field instrumentation should be calibrated prior to use and on a daily basis (or as required). Calibration certificates and records to be included.	Australian Standard AS4482.1-2005; NEPM (1999) Schedule B(2)	Y	-	Refer to Appendix C for Calibration Certificates.
Sample Preservation and Storage	Samples preserved and transported in a manner such that sample integrity is maintained.	Samples stored in pre-spiked bottles supplied by the laboratory. Transported at a temperature between 0°C - 4°C (or as specified for analytical methods)	Australian Standard AS4482.1-2005	N	-	Samples received by ALS and Envirolab with ice present. Sample temperatures measured by ALS ranged between 3.1-9.9°C. Temperatures measured by Envirolab ranged between 3.0-6.2°C. Temperatures measured for 7504, EM1517153, EM1517312, EM1517384 and EM1517387 exceeded acceptable limits.
Sample Holding Times	Samples transported to the laboratory for extraction and analysis within recommended holding times.	Analyte Specific	NATA accredited method specific holding times (refer to laboratory QC documentation)	N	-	All batches except for EM1517153, EM1517312 and EM1517384, were analysed within method specific holding times. EM1517153 - 1 analyte breached EM1517312 - 1 analyte breached EM1517384 - 2 analytes breached
Sample Analysis	Samples were analysed for requested analytes using appropriate analytical techniques.	Samples analysed by a laboratory that is NATA accredited for the required analytical methods.	NATA Technical Note No. 23 (2008)	Y	-	ALS and Envirolab laboratories are NATA accredited
Limits of Reporting	Analytical limits of reporting should be below relevant screening criteria.	PQL < lowest applicable screening/assessment criteria	Australian Standard AS4482.1-2005	N	-	Limits of reporting exceeded screening criteria for 12 analytes: - Maintenance of Ecosystems exceeded LORs for 4 analytes (Hexachlorobutadiene, Anthracene, Benzo(a) pyrene and Phenanthrene) - Potable Water Supply exceeded LORs for 10 analytes (1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2,3-trichloropropane, Benz(a)anthracene, Benzo(a) pyrene, Benzo(k)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Naphthalene) - Primary Contact Recreation exceeded LORs for 6 analytes (1,1,2,2-tetrachloroethane, 1,2,3-trichloropropane, Benz(a)anthracene, Benzo(a) pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene)
Primary Duplicates	Relative percent difference (RPD) between duplicate sample and parent sample within acceptable range.	RPD generated should be ±50%	FBURA Sampling and Analysis Quality Plan 2015	N	Precision	RPD exceedances are displayed in Table K7. Exceedances were observed between GW21 and QC01, and GW35 and QC05. These are not considered to affect the validity of the dataset for the purposes of this report.
Secondary Duplicates				N	Precision	RPD exceedances are displayed in Table K7. Exceedances were observed between GW21 and QC02, and GW35 and QC06. These are not considered to affect the validity of the dataset for the purposes of this report.
Rinsate Blanks	Provide a baseline for water used to prepare Rinsate Blanks	Collected for each batch of deionised water used for decontamination of sampling equipment		Y	Completeness	Results for rinsate blanks were reported below LOR.
Field Method Blanks	Analytes reported at concentrations below the laboratory limit of reporting.	<LOR		Y	Completeness	Results for field method blanks were reported below LOR.
Trip Blanks				Y	Completeness	Results for trip blanks were reported below LOR.
Laboratory Method Blank				Y	Completeness	No method blank outliers occurred.
Laboratory Duplicates	Relative percent deviation (RPD) between laboratory duplicate samples within acceptable range.	RPD generated should be ±30%		Y	Precision	No laboratory duplicates RPD exceedances occurred.
Matrix Spike Recoveries	Recoveries within adopted acceptability range.	Recoveries should be within 75% - 125%.		N	Accuracy	Matrix spike exceedances were noted for 4 ALS batches. EM1517153 had 4 analyte breaches, EM1517312 had 1 analyte breach, EM1517384 had 2 analyte breaches and EM1517387 had 2 analyte breaches. These are not considered to affect the validity of the dataset for the purposes of this report.

QA/QC Item	Data Quality Indicators	Acceptability Limits	Source Guidance Document	Pass?	Applicable DQO	Comments
Laboratory Control Spike (LCS) Recoveries	Recoveries within adopted acceptability range.	Recoveries should be within 70% - 130%.	FBURA Sampling and Analysis Quality Plan 2015	Y	Accuracy	No LCS recovery exceedences occurred.
Surrogate Spike Recoveries	Recoveries within adopted acceptability range.	As specified in laboratory QC report, if applicable. If laboratory does not specify, acceptance criteria of 70%-130% has been adopted.		N	Accuracy	Surrogate spike recovery exceedences were noted for 2 ALS batches. EM1517153 had 2 analyte breaches and EM1517387 had 1 analyte breach.
Frequency of Quality Control Measurements	Number of quality control samples is consistent with site specific requirements	Primary Duplicates collected at a frequency of 5% of total samples. Secondary Duplicates collected at a frequency of 5% of total samples. One rinsate blank per matrix per piece of equipment requiring decontamination should be collected per day. One trip blank per day. Laboratory control measures including duplicates, method blanks, matrix spike recovery and laboratory control spike to be measured at a frequency of 10% of the total samples analysed.		Y	-	Primary Duplicates and Secondary Duplicates were collected at frequencies of 8%. One trip blank was collected per esky. One rinsate and field blank was collected per piece of equipment per day. Laboratory control measures were collected at the expected frequencies.

Table E2 - GME2
Data Quality Summary Table

QA/QC Item	Data Quality Indicators	Acceptability Limits	Source Guidance Document	Pass?	Applicable DQO	Comments
Field Calibration	All equipment/ instrumentation has been calibrated prior to use in the field.	Field instrumentation should be calibrated prior to use and on a daily basis (or as required). Calibration certificates and records to be included.	Australian Standard AS4482.1-2005; NEPM (1999) Schedule B(2)	Y	-	Refer to Appendix C for Calibration Certificates.
Sample Preservation and Storage	Samples preserved and transported in a manner such that sample integrity is maintained.	Samples stored in pre-spiked bottles supplied by the laboratory. Transported at a temperature between 0°C - 4°C (or as specified for analytical methods)	Australian Standard AS4482.1-2005	Y	-	Samples received by ALS and Envirolab with ice present. Sample temperatures measured by ALS were 0.9°C. Temperatures measured by Envirolab were 1.8°C.
Sample Holding Times	Samples transported to the laboratory for extraction and analysis within recommended holding times.	Analyte Specific	NATA accredited method specific holding times (refer to laboratory QC documentation)	N	-	All samples within EM1605749 and 8547 were analysed within method specific holding times with the exception of the following: - Nitrite as N and Reactive Phosphorous as P: GW06, GW11, GW12, GW25, GW26, GW01, GW03 – GW05, GW07 – GW09, GW14, GW16, GW17, GW20, GW21, GW33 – GW38 This is not considered to affect the outcome of this report as the holding times were breached by between 1 – 2 days and the 2016 GME2 data appears to be consistent with the 2015 GME1 data.
Sample Analysis	Samples were analysed for requested analytes using appropriate analytical techniques.	Samples analysed by a laboratory that is NATA accredited for the required analytical methods.	NATA Technical Note No. 23 (2008)	Y	-	ALS and Envirolab laboratories are NATA accredited.
Limits of Reporting	Analytical limits of reporting should be below relevant screening criteria.	PQL < lowest applicable screening/assessment criteria	Australian Standard AS4482.1-2005	N	-	Limits of reporting exceeded screening criteria for 12 analytes: - Maintenance of Ecosystems exceeded LORs for 4 analytes (Hexachlorobutadiene, Anthracene, Benzo(a) pyrene and Phenanthrene) - Potable Water Supply exceeded LORs for 10 analytes (1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2,3-trichloropropane, Benzo(a)anthracene, Benzo(a) pyrene, Benzo(k)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Naphthalene) - Primary Contact Recreation exceeded LORs for 6 analytes (1,1,2,2-tetrachloroethane, 1,2,3-trichloropropane, Benzo(a)anthracene, Benzo(a) pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene)
Primary Duplicates	Relative percent difference (RPD) between duplicate sample and parent sample within acceptable range.	RPD generated should be $\pm 50\%$	FBURA Sampling and Analysis Quality Plan 2015	N	Precision	RPD exceedances are displayed in Table E3 - 2016. Exceedances were observed between GW33 and QC01, and GW09 and QC03. These are not considered to affect the validity of the dataset for the purposes of this report.
Secondary Duplicates				N	Precision	RPD exceedances are displayed in Table E3 - 2016. Exceedances were observed between GW33 and QC02, and GW09 and QC04. These are not considered to affect the validity of the dataset for the purposes of this report.
Rinsate Blanks	Provide a baseline for water used to prepare Rinsate Blanks	Collected for each batch of deionised water used for decontamination of sampling equipment	FBURA Sampling and Analysis Quality Plan 2015	Y	Completeness	Results for rinsate blanks were reported below LOR.
Field Method Blanks	Analytes reported at concentrations below the laboratory limit of reporting.	<LOR		Y	Completeness	Results for field method blanks were reported below LOR.
Trip Blanks				Y	Completeness	Results for trip blanks were reported below LOR.
Laboratory Method Blank				Y	Completeness	No method blank outliers occurred.
Laboratory Duplicates	Relative percent deviation (RPD) between laboratory duplicate samples within acceptable range.	RPD generated should be $\pm 30\%$	N	Precision	With the exception of Mg in Batch 8547 and PAH/Phenols and TRH (semi volatile fraction) within EM1605749, no other laboratory duplicates RPD exceedances occurred.	
Matrix Spike Recoveries	Recoveries within adopted acceptability range.	Recoveries should be within 75% - 125%.	N	Accuracy	Matrix spike exceedances were noted for 1 ALS batch. EM1605749 had 2 analyte breaches for PAH/Phenols and TRH Volatiles/BTEX. These are not considered to affect the validity of the dataset for the purposes of this report.	
Laboratory Control Spike (LCS) Recoveries	Recoveries within adopted acceptability range.	Recoveries should be within 70% - 130%.	Y	Accuracy	No LCS recovery exceedances occurred.	
Surrogate Spike Recoveries	Recoveries within adopted acceptability range.	As specified in laboratory QC report, if applicable. If laboratory does not specify, acceptance criteria of 70%-130% has been adopted.	N	Accuracy	For all regular sample matrices, no surrogate recovery outliers occurred in EM1605749 and 8547.	
Frequency of Quality Control Measurements	Number of quality control samples is consistent with site specific requirements	Primary Duplicates collected at a frequency of 5% of total samples. Secondary Duplicates collected at a frequency of 5% of total samples. One rinsate blank per matrix per piece of equipment requiring decontamination should be collected per day. One trip blank per day. Laboratory control measures including duplicates, method blanks, matrix spike recovery and laboratory control spike to be measured at a frequency of 10% of the total samples analysed.	FBURA Sampling and Analysis Quality Plan 2015	Y	-	Primary Duplicates and Secondary Duplicates were collected at frequencies of 5%. One trip blank was collected per esky. One rinsate blank was collected per piece of equipment per day. Laboratory control measures were collected at the expected frequencies.

Table E3 - GME1
Data Validation - Duplicate and Triplicate RPDs

Chem Group	ChemName	Units	EQL	EM1517312		RPD	EM1517312		RPD	EM1517387		RPD	EM1517312		RPD	EM1517312		RPD	EM1517387		RPD
				GW21	QC01		GW27	QC03		GW35	QC05		GW21	QC02		GW27	QC04				
Field ID	Sampled Date/Time			18/11/2015 15:00	18/11/2015 15:00		18/11/2015 15:00	18/11/2015 15:00		20/11/2015 15:00	20/11/2015 15:00		18/11/2015 15:00	18/11/2015 15:00		18/11/2015 15:00	18/11/2015 15:00		20/11/2015 15:00	20/11/2015 15:00	
Sulfate (Turbidimetric) as SO4	Sulfate as SO4 - Turbidimetric (Filtered)	mg/l	1	230.0	227.0	1%	-	-	-	2110	1950	8%	230.0	-	-	-	-	-	2110	-	-
Total Oxidised Sulfur as SO4 2-	Total Oxidised Sulfur as SO4 2-	mg/l	1	266.0	242.0	9%	-	-	-	2200	1790	21%	266.0	-	-	-	-	-	2200	-	-
BTEX	Benzene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-
	Ethylbenzene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<2	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<2	-	-
	Toluene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<2	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<2	-	-
	Xylene (m & p)	µg/L	1 (Primary); 2 (Interlab)	<1.0	<1.0	-	<1.0	<1.0	-	<2	-	-	<1.0	<2.0	-	<1.0	<2.0	-	<2	-	-
	Xylene (o)	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<2	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<2	-	-
Chlorinated Hydrocarbons	C6-C10 less BTEX (F1)	mg/l	0.02 (Primary); 0.01 (Interlab)	<0.02	<0.02	-	<0.02	<0.02	-	<0.02	-	-	<0.02	<0.01	-	<0.02	<0.01	-	<0.02	-	-
	1,1,1,2-tetrachloroethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	1,1,1-trichloroethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	1,1,2,2-tetrachloroethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	1,1,2-trichloroethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	1,1-dichloroethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	1,1-dichloroethene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	1,1-dichloropropane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	1,2-dichloro-3-chloropropane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	1,2-dichloroethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	1,2-dichloropropane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	1,3-dichloropropane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	2,2-dichloropropane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	Bromodichloromethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	Bromofom	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	Carbon tetrachloride	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	Chlorodibromomethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	Chloroethane	µg/L	10	<10.0	<10.0	-	<10.0	<10.0	-	-	-	-	<10.0	<10.0	-	<10.0	<10.0	-	-	-	-
	Chloroform	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	cis-1,2-dichloroethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	cis-1,3-dichloropropane	µg/L	2 (Primary); 1 (Interlab)	<2.0	<2.0	-	<2.0	<2.0	-	-	-	-	<2.0	<1.0	-	<2.0	<1.0	-	-	-	-
	Dibromomethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	Dichloromethane	µg/L	2	<5.0	<5.0	-	<5.0	<5.0	-	-	-	-	<5.0	<1.0	-	<5.0	<1.0	-	-	-	-
	Hexachlorobutadiene	µg/L	0.5 (Primary); 1 (Interlab)	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	Trichloroethene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	Tetrachloroethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	trans-1,2-dichloroethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-
	trans-1,3-dichloropropane	µg/L	2 (Primary); 1 (Interlab)	<2.0	<2.0	-	<2.0	<2.0	-	-	-	-	<2.0	<1.0	-	<2.0	<1.0	-	-	-	-
Vinyl chloride	µg/L	0.2 (Primary); 10 (Interlab)	<10.0	<10.0	-	<10.0	<10.0	-	-	-	-	<10.0	<10.0	-	<10.0	<10.0	-	-	-	-	
Halogenated Benzenes	1,2,3-trichlorobenzene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	
	1,2,4-trichlorobenzene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	
	1,2-dichlorobenzene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	
	1,3-dichlorobenzene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	
	1,4-dichlorobenzene	µg/L	0.1 (Primary); 1 (Interlab)	<1.0	<1.0	-	<1.0	<1.0	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	
	2-chlorotoluene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	
	4-chlorotoluene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	
	Bromobenzene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	
	Chlorobenzene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	
	1,2-dibromoethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	
	Bromomethane	µg/L	10	<10.0	<10.0	-	<10.0	<10.0	-	-	-	<10.0	<10.0	-	<10.0	<10.0	-	-	-	-	
	Chloromethane	µg/L	10	<10.0	<10.0	-	<10.0	<10.0	-	-	-	<10.0	<10.0	-	<10.0	<10.0	-	-	-	-	
	Dichlorodifluoromethane	µg/L	1	<10.0	<10.0	-	<10.0	<10.0	-	-	-	<10.0	<10.0	-	<10.0	<10.0	-	-	-	-	
Iodomethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-		
Trichlorofluoromethane	µg/L	10	<10.0	<10.0	-	<10.0	<10.0	-	-	-	<10.0	<10.0	-	<10.0	<10.0	-	-	-	-		
Inorganics	Alkalinity (Hydroxide) as CaCO3	µg/L	1000	<1000.0	<1000.0	-	<1000.0	<1000.0	-	<1000	<1000	-	<1000.0	<1000.0	-	<1000.0	<1000.0	-	<1000	<1000	-
	Alkalinity (total) as CaCO3	mg/l	1	222.0	224.0	1%	-	-	-	487	473	3%	222.0	-	-	-	-	487	-	-	
	Ammonia as N	µg/l	10	640.0	580.0	10%	540.0	550.0	2%	720	720	1%	640.0	-	-	540.0	-	720	-	-	
	Anions Total	meq/L	0.01	10.2	10.2	0%	-	-	-	58.2	54.5	7%	10.2	-	-	-	-	58.2	-	-	
	Alkalinity (Bicarbonate as CaCO3)	mg/l	1	222.0	224.0	1%	-	-	-	487	473	3%	222.0	-	-	-	-	487	-	-	
	Alkalinity (Carbonate as CaCO3)	mg/l	1	<1.0	<1.0	-	-	-	-	<1	<1	-	<1.0	<1.0	-	<1.0	<1.0	-	<1	<1	-
	Cations Total	meq/L	0.01	10.6	10.6	0%	-	-	-	59.7	57.2	4%	10.6	-	-	-	-	59.7	-	-	
	Chloride	mg/l	1	36.0	36.0	0%	-	-	-	161	158	2%	36.0	30.0	18%	-	-	161	280	54%	
	Fluoride	mg/l	0.1	0.5	0.5	0%	-	-	-	0.2	0.2	0%	0.5	0.3	50%	-	-	0.2	2.8	173%	
	Ionic Balance	%	0.01	1.6	1.92	18%	-	-	-	1.31	2.43	60%	1.6	0.03	193%	-	-	1.31	48	189%	
	Nitrate (as N)	mg/l	0.01 (Primary); 0.005 (Interlab)	0.02	0.02	0%	-	-	-	0.07	<0.01	-	0.02	<0.005	-	-	-	0.07	<0.005	-	
	Nitrite (as N)	mg/l	0.01 (Primary); 0.005 (Interlab)	<0.01																	

Table E3 - GME1
Data Validation - Duplicate and Triplicate RPDs

Lab Report Number	EM1517312	EM1517312	EM1517312	EM1517312	EM1517387	EM1517387	EM1517312	Interlab_D	EM1517312	Interlab_D	EM1517387	Interlab_D
Field ID	GW21	QC01	GW27	QC03	GW35	QC05	GW21	QC02	GW27	QC04	GW35	QC06
Sampled Date/Time	18/11/2015 15:00	18/11/2015 15:00	18/11/2015 15:00	18/11/2015 15:00	20/11/2015 15:00	20/11/2015 15:00	18/11/2015 15:00	18/11/2015 15:00	18/11/2015 15:00	18/11/2015 15:00	20/11/2015 15:00	20/11/2015 15:00

Chem_Group	ChemName	Units	EQL																
	Selenium (Filtered)	mg/l	0.01 (Primary); 0.001 (Interlab)	<0.01	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	-	<0.01	<0.001	-	<0.01	<0.001	-	<0.01
	Zinc (Filtered)	mg/l	0.005 (Primary); 0.001 (Interlab)	<0.005	<0.005	-	0.017	0.019	11%	0.007	<0.005	-	<0.005	0.007	-	0.017	0.016	6%	0.007
PAH	Benzo(b)fluoranthene	µg/L	0.001	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001
PAH/Phenols	Acenaphthene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	Acenaphthylene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	Anthracene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	Benzo(a)anthracene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	Benzo(a) pyrene	µg/L	0.5 (Primary); 1 (Interlab)	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	-	-	<0.5	<1.0	-	<0.5	<1.0	-	<0.5
	Benzo(g,h,i)perylene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	Benzo(k)fluoranthene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	Chrysene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	Dibenz(a,h)anthracene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	Fluoranthene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	Fluorene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	Indeno(1,2,3-c,d)pyrene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	Naphthalene	µg/L	5 (Primary); 1 (Interlab)	<5.0	<5.0	-	<5.0	<5.0	-	<1	-	-	<5.0	<1.0	-	<5.0	<1.0	-	<1
	Naphthalene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	PAHs (Sum of total)	µg/L	0.5 (Primary); 1 (Interlab)	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	-	-	<0.5	<1.0	-	<0.5	<1.0	-	<0.5
	Phenanthrene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
	Pyrene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1	-	-	<1.0	<1.0	-	<1.0	<1.0	-	<1
Solvents	2-hexanone (MBK)	µg/L	10	<10.0	<10.0	-	<10.0	<10.0	-	-	-	-	<10.0	-	-	<10.0	-	-	<10.0
	Methyl Ethyl Ketone	µg/L	10	<10.0	<10.0	-	<10.0	<10.0	-	-	-	-	<10.0	-	-	<10.0	-	-	<10.0
	4-Methyl-2-pentanone	µg/L	10	<10.0	<10.0	-	<10.0	<10.0	-	-	-	-	<10.0	-	-	<10.0	-	-	<10.0
	Acetone	mg/l	0.01	<0.01	<0.01	-	<0.01	<0.01	-	-	-	-	<0.01	-	-	<0.01	-	-	<0.01
	Carbon disulfide	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	-	-	<1.0	-	-	<1.0
	Vinyl acetate	µg/L	10	<10.0	<10.0	-	<10.0	<10.0	-	-	-	-	<10.0	-	-	<10.0	-	-	<10.0
TPH	F2-NAPHTHALENE	mg/l	0.1 (Primary); 0.05 (Interlab)	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	<0.1	<0.05	-	<0.1	<0.05	-	<0.1
	C10 - C36 (Sum of total)	µg/L	50	240.0	<50.0	-	<50.0	<50.0	-	110	-	-	240.0	-	-	<50.0	-	-	110
	C8 - C9	µg/L	20 (Primary); 10 (Interlab)	<20.0	<20.0	-	<20.0	<20.0	-	<20	-	-	<20.0	<10.0	-	<20.0	<10.0	-	<20
	C10 - C14	µg/L	50	70.0	<50.0	-	<50.0	<50.0	-	<50	-	-	70.0	<50.0	-	<50.0	<50.0	-	<50
	C15 - C28	µg/L	100	170.0	<100.0	-	<100.0	<100.0	-	110	-	-	170.0	<100.0	-	<100.0	<100.0	-	110
	C29-C36	µg/L	50 (Primary); 100 (Interlab)	<50.0	<50.0	-	<50.0	<50.0	-	<50	-	-	<50.0	<100.0	-	<50.0	<100.0	-	<50
	C10 - C40 (Sum of total)	µg/L	100	180.0	<100.0	-	<100.0	<100.0	-	100	-	-	180.0	-	-	<100.0	-	-	100
	C10-C16	mg/l	0.1 (Primary); 0.05 (Interlab)	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.05	-	<0.1	<0.05	-	<0.1
	C16-C34	mg/l	0.1	0.16	<0.1	-	<0.1	<0.1	-	0.1	-	-	0.16	<0.1	-	<0.1	<0.1	-	0.1
	C34-C40	mg/l	0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	-	<0.1	<0.1	-	<0.1
	C6-C10	mg/l	0.02 (Primary); 0.01 (Interlab)	<0.02	<0.02	-	<0.02	<0.02	-	<0.02	-	-	<0.02	<0.01	-	<0.02	<0.01	-	<0.02
VOCS	cis-1,4-Dichloro-2-butene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	-	-	<1.0	-	-	<1.0
	Pentachloroethane	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	-	-	<1.0	-	-	<1.0
	trans-1,4-Dichloro-2-butene	µg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	-	-	-	<1.0	-	-	<1.0	-	-	<1.0

*RPDs have only been considered where a concentration is greater than 0 times the EQL
 **High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 50 (0-10 x EQL); 30 (10-30 x EQL); 30 (> 30 x EQL)
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Table E3 - GME2
Data Validation - Duplicate and Triplicate RPDs

Lab Report Number	EM1605749	EM1605749		EM1605749	EM1605749		EM1605749	8547		EM1605749	8547	
Field ID	GW33	QC01	RPD	GW09	QC03	RPD	GW33	QC02	RPD	GW09	QC04	RPD
Sampled Date/Time	17/05/2016	17/05/2016		17/05/2016	17/05/2016		17/05/2016	17/05/2016		17/05/2016	17/05/2016	

Chemical Group	Chemical Name	Units	EQL											
Sulfate (Turbidity)	Sulfate as SO4 - Turbidity	mg/l	1	7.0	4.0	55	392.0	413.0	5	7.0			392.0	
Total Oxidised Sulfur	Total Oxidised Sulfur as S	mg/l	1	8.0	6.0	29	386.0	421.0	9	8.0			386.0	
BTEX	Benzene	µg/L	1	<1.0			<1.0			<1.0	<1.0	0	<1.0	<1.0
	Benzene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	Ethylbenzene	µg/L	2 (Primary): 1 (Interlab)	<2.0	<2.0	0	<2.0	<2.0	0	<2.0	<1.0	0	<2.0	<1.0
	Ethylbenzene	µg/L	1	<1.0			<1.0			<1.0	<1.0	0	<1.0	<1.0
	Toluene	µg/L	2 (Primary): 1 (Interlab)	<2.0	<2.0	0	<2.0	<2.0	0	<2.0	<1.0	0	<2.0	<1.0
	Toluene	µg/L	1	<1.0			<1.0			<1.0	<1.0	0	<1.0	<1.0
	Total BTEX	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0	<0.001			<0.001	
	Xylene (m & p)	µg/L	2	<2.0	<2.0	0	<2.0	<2.0	0	<2.0	<2.0	0	<2.0	<2.0
	Xylene (m & p)	µg/L	1 (Primary): 2 (Interlab)	<1.0			<1.0			<1.0	<2.0	0	<1.0	<2.0
	Xylene (o)	µg/L	2 (Primary): 1 (Interlab)	<2.0	<2.0	0	<2.0	<2.0	0	<2.0	<1.0	0	<2.0	<1.0
	Xylene (o)	µg/L	1	<1.0			<1.0			<1.0	<1.0	0	<1.0	<1.0
	Xylene Total	µg/L	2	<2.0	<2.0	0	<2.0	<2.0	0	<2.0			<2.0	
	C6-C10 less BTEX (F1)	mg/l	0.02 (Primary): 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01
Inorganics	Alkalinity (Hydroxide) as Ca	µg/l	1000	<1000.0	<1000.0	0	<1000.0	<1000.0	0	<1000.0			<1000.0	
	Alkalinity (total) as CaCO3	mg/l	1	720.0	715.0	1	422.0	416.0	1	720.0			422.0	
	Ammonia as N	µg/l	10	6810.0	7060.0	4	6030.0	7630.0	23	6810.0			6030.0	
	Anions Total	meq/L	0.01	18.4	18.1	2	19.0	19.4	2	18.4			19.0	
	Alkalinity (Bicarbonate as Ca)	mg/l	1	720.0	715.0	1	422.0	416.0	1	720.0			422.0	
	Alkalinity (Carbonate as Ca)	mg/l	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0			<1.0	
	Cations Total	meq/L	0.01	16.0	16.6	4	18.4	18.1	2	16.0			18.4	
	Chloride	mg/l	1	136.0	131.0	4	87.0	88.0	1	136.0	71.0	63	87.0	34.0
	Fluoride	mg/l	0.1	0.2	0.2	0	0.3	0.3	0	0.2			0.3	
	Ionic Balance	%	0.01	6.72	4.23	45	1.83	3.46	62	6.72	-0.8	200	1.83	15.0
	Nitrate (as N)	mg/l	0.01	<0.01	0.01	0	<0.01	0.01	0	<0.01			<0.01	
	Nitrite (as N)	mg/l	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01			<0.01	
	pH (Lab)	pH_Units	0.01	7.46	7.55	1	7.53	7.64	1	7.46	7.8	4	7.53	7.8
	Reactive Phosphorus as P	mg/l	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01			<0.01	
	Sodium (Filtered)	mg/l	1	63.0	66.0	5	134.0	125.0	7	63.0			134.0	
	TDS	mg/l	10 (Primary): 5 (Interlab)	1050.0	972.0	8	1160.0	1130.0	3	1050.0	700.0	40	1160.0	980.0
Metals	Aluminium (Filtered)	mg/l	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01
	Arsenic (Filtered)	mg/l	0.001	0.014	0.002	150	<0.001	<0.001	0	0.014	0.016	13	<0.001	<0.001
	Cadmium (Filtered)	mg/l	0.0001	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001
	Calcium (Filtered)	mg/l	1	139.0	144.0	4	186.0	189.0	2	139.0			186.0	
	Chromium (III+VI) (Filtered)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001
	Copper (Filtered)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001
	Iron (Filtered)	mg/l	0.05 (Primary): 0.01 (Interlab)	16.9	9.92	52	14.6	13.5	8	16.9	26.0	42	14.6	13.0
	Lead (Filtered)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001
	Magnesium (Filtered)	mg/l	1	70.0	72.0	3	32.0	32.0	0	70.0			32.0	
	Manganese (Filtered)	mg/l	0.001	0.286	0.276	4	0.318	0.293	8	0.286			0.318	
	Mercury (Filtered)	mg/l	0.0001 (Primary): 0.0001 (Interlab)	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001
	Nickel (Filtered)	mg/l	0.001	0.013	0.013	0	0.016	0.013	21	0.013	0.018	32	0.016	0.025
	Potassium (Filtered)	mg/l	1	24.0	24.0	0	24.0	23.0	4	24.0			24.0	
	Selenium (Filtered)	mg/l	0.01 (Primary): 0.001 (Interlab)	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.001	0	<0.01	<0.001
	Zinc (Filtered)	mg/l	0.005 (Primary): 0.001 (Interlab)	<0.005	<0.005	0	<0.005	0.007	33	<0.005	0.005	0	<0.005	0.002
PAH	Benzo[b+j]fluoranthene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0	<0.001			<0.001	
PAH/Phenols	Acenaphthene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	Acenaphthylene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	Anthracene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	Benz(a)anthracene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	Benzo(a) pyrene	µg/L	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<1.0	0	<0.5	<1.0
	Benzo(g,h,i)perylene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	Benzo(k)fluoranthene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0			<1.0	
	Chrysene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	Dibenz(a,h)anthracene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	Fluoranthene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	Fluorene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	Indeno(1,2,3-c,d)pyrene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	Naphthalene	µg/L	5 (Primary): 1 (Interlab)	<5.0			<5.0			<5.0	<1.0	0	<5.0	<1.0
	Naphthalene	µg/L	5 (Primary): 1 (Interlab)	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<1.0	0	<5.0	<1.0
	Naphthalene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	PAHs (Sum of total)	µg/L	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<1.0	0	<0.5	<1.0
	Phenanthrene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
	Pyrene	µg/L	1	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0
TPH	F2-NAPHTHALENE	mg/l	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.05
	+C10 - C36 (Sum of total)	µg/L	50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0			<50.0	
	C6 - C9	µg/L	20 (Primary): 10 (Interlab)	<20.0	<20.0	0	<20.0	<20.0	0	<20.0	<10.0	0	<20.0	<10.0
	C10 - C14	µg/L	50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0
	C15 - C28	µg/L	100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0
	C29-C36	µg/L	50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<100.0	0	<50.0	<100.0
	C10 - C40 (Sum of total)	µg/L	100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0			<100.0	
	C10-C16	mg/l	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.05
	C16-C34	mg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1
	C34-C40	mg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1
	C6-C10	mg/l	0.02 (Primary): 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.01

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 50 (1-10 x EQL); 50 (10-20 x EQL); 50 (> 20 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Appendix F

Calibration Certificates

RENTALS

Equipment Certification Report – TPS 90FLMV Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 6.88 / pH 4.00	6.88pH	4.00pH	NC1154/NE1989	<input checked="" type="checkbox"/>
Conductivity	58.6mS/cm	0.0mS/cm	58.6mS/cm	NH1682	<input checked="" type="checkbox"/>
TDS	36 ppk	0.0 ppk	36.0ppk	ND1567	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0.0ppm in Sodium Sulphite	8.7 ppm Saturation in Air	458	<input checked="" type="checkbox"/>

Check only

Redox (ORP) *	Electrode operability test	240mV +/- 10%	247. mV	ND1568/ND1569	<input checked="" type="checkbox"/>
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* This meter uses an Ag/AgCl ORP electrode. To convert readings to SHE (Standard Hydrogen Electrode), add 199mV to the mV reading.

- Battery Status 8.0V (min 7.2V)
 Electrical Safety Tag attached (AS/NZS 3760)

- Temperature 21.0 °C
 Electrodes Cleaned and checked

Tag No: 009761

Valid to: 18/5/16

Date: 13th May, 2016

Signed: _____

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	90FLMV Unit. Ops check/Battery status: <u>8.0V</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor with wetting cap, 5m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS/Temperature K=10 sensor, 5m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen YSI5739 sensor with wetting cap, 5m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Redox (ORP) sensor with wetting cap, 5m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Power supply 240V to 12V DC 200mA
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Syringe with storage solution for pH and ORP sensors
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Carry Case
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 13/5/16

Signed: _____

TFS Reference	<u>CM005411</u>	Return Date:	<u>/ /</u>
Customer Reference	<u>60431087/1.4</u>	Return Time:	
Equipment ID	<u>90FLMVW</u>	Condition on return:	
Equipment Serial No.			

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Phone: (Free Call) 1300 735 295		Fax: (Free Call) 1800 675 123		Email: RentalsAU@ThermoFisher.com	
Melbourne Branch 5 Caribbean Drive Scoresby 3179	Sydney Branch Level 1, 4 Talavera Road, North Ryde 2113	Adelaide Branch 27 Beulah Road, Norwood, South Australia 5067	Brisbane Branch Unit 2/5 Ross St Newstead 4006	Perth Branch 121 Beringarra Ave Meliaga WA 6090	

RENTALS

EQUIPMENT CERTIFICATION REPORT

Sample Pro Micro Purge Low-Flow Bladder Sampling Pump

This Pump has been checked as follows:

Cleaned / checked Description MPKIT-15
 Clean and check all components
 Date: 13th MAY 2016
 Checked by: MINTO
 Signature: *Minto*

Please check that the following items are received and all items are returned. Please clean equipment before returning. **A minimum \$30 service/repair charge applies to any unclean or damaged items.**

Sent	Received	Returned	Description
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	QED Sample MicroPurge Pump Serial No: <u>11576</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Operating Field Guide laminated
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Controller ID: <u>QMP10M</u> Batt Status <u>3.6</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Controller Blue Airline Hose
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Blue Airline Hose Quick Connect Fitting for 1/4" Airline
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Tube & Cap
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hanger Cable S/steel, length <u>60</u> m
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hanger Cable Clamp - Black with Orange Tip
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Controller Instructions inside case
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Compressor ID: _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Comp connecting Hose & Push lock fittings
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gas Bottle CO2 ID: _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CO2D Gas Regulator ID: <u>REG102DR</u> m Carry Case
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CO2D Cylinder Gas Regulator Shift Spanner
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gas Bottle Trolley
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2x Cylinder weight... Without Trolley <u>16</u> KG
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Flow Cell ID: _____ With Lid: Yes/No
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare Disposable Bladders, qty <u>2</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare balls, Qty <u>2</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare o-rings, Qty <u>2</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Processors Signature/ Initials

QUOTE NO.: CM005411
 ID: QSP6P

CLIENT'S REF: P/O No: 60431087/1.4
 CLIENT'S REF: Job No: _____

RETURN DATE: / /
 TIME:

CONDITION ON RETURN : _____

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