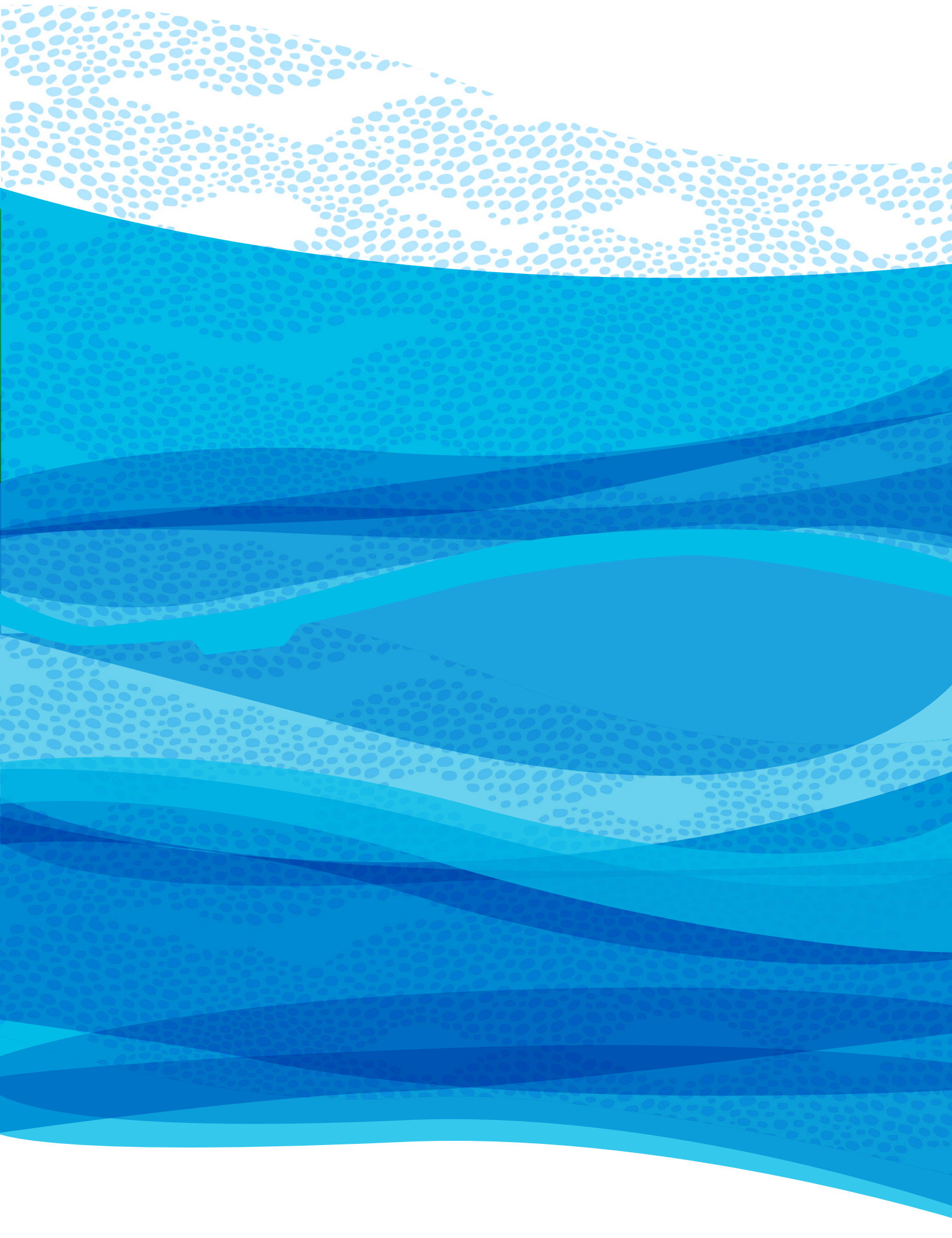


**REGIONAL
GROUNDWATER
QUALITY ASSESSMENT
FISHERMANS BEND
EMPLOYMENT
PRECINCT**



Regional Groundwater Quality Assessment

Fishermans Bend Employment Precinct

Client: Environment Protection Authority Victoria

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01-Aug-2017

Job No.: 60537182

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Quality Information

Document Regional Groundwater Quality Assessment

Ref 60537182

Date 01-Aug-2017

Prepared by Averyll Coyne

Reviewed by Gavin Scherer

Revision History


Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	09-June-2017	Draft	Gavin Scherer Technical Director	
B	07-Jul-2017	Draft	Gavin Scherer Technical Director	
C	24-Jul-2017	Draft	Gavin Scherer Technical Director	
D	01-Aug-2017	Final	Gavin Scherer Technical Director	

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Executive Summary

AECOM Australia Pty Ltd (AECOM) was requested by the Environment Protection Authority Victoria (EPA) to undertake a groundwater quality assessment at the Fishermans Bend Employment Precinct (the precinct).

The precinct is located to the south-west of Melbourne's central business district (CBD) and covers an area of approximately 245 hectares (**Figure F1**). The precinct is bound by the Yarra River to the north and west, the Westgate Freeway to the south and Todd Road to the east. The precinct itself is mixed use between heavy and light industrial and commercial landholdings, as well as public parks. Notable land holders in the area include Boeing, Holden, Defence Science and Technology Organisation (DSTO) and Parks Victoria (Westgate Park).

The assessment focused primarily on characterising the condition of the shallow groundwater aquifer, to determine key factors that may be influencing its quality at a regional scale, and provide a summary of regional groundwater quality for future reference. The regional groundwater conditions described in this report may be considered when informing future development decisions at the precinct.

The precinct is one of five precincts within Fishermans Bend. AECOM completed the initial regional baseline groundwater assessment in the other four precincts (Wirraway, Sandridge, Lorimer and Montague) in 2015-2016. Note that the 2015-2016 assessment is referred to throughout this report as Part 1, while the 2017 assessment in the Employment Precinct is referred to as Part 2.

The primary objectives of the assessment were to:

- Summarise the results of the groundwater monitoring in the Employment Precinct.
- Provide a Preliminary Conceptual Site Model.
- Determine the baseline shallow groundwater quality across the precinct.
- Provide possible regional background concentrations of chemicals of potential concern (CoPC) based on the data obtained.
- Describe any potential point sources of contamination identified.
- Confirm the protected and precluded beneficial uses of shallow groundwater at the precinct.
- Provide evidence for the identification of a potential regional Groundwater Quality Restricted Use Zone (Regional GQRUZ).

To achieve the project objectives, an assessment framework was developed to:

- Describe the physical-chemical condition of the shallow aquifer encountered.
- 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 and or impacts from both soil and groundwater) 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 range of chemical concentrations that may be encountered in groundwater in association with 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 scope of works to achieve the objectives included:

- Installation of 27 new groundwater monitoring wells across the precinct, with soil sampling at each location, and limited analysis of soil samples across the precinct.

- Survey of the top of each new groundwater monitoring well casing (PVC) and ground surface elevation at each location (i.e. 27 locations in total). Survey data of existing wells was also obtained where possible, however, groundwater wells GW42 (Boeing), GMW83 (DSTO) and F3 (GMH) have not yet been provided by the owners of these wells.
- Gauging of standing water levels (SWL) within 41 groundwater monitoring wells (i.e. 27 new groundwater wells and 14 existing groundwater wells).
- Collection of field groundwater quality parameters from 41 groundwater monitoring wells including dissolved oxygen (DO), electrical conductivity (EC), pH, oxygen reduction potential (ORP) and temperature.
- Collection of groundwater samples from 41 groundwater monitoring wells and quality control and quality assurance (QA/QC) samples.
- Laboratory analysis of groundwater and quality assurance/quality control (QA/QC) samples.
- Data collation, assessment and reporting.

This report should be considered as a baseline groundwater assessment (only). Limited soil analysis was undertaken during installation of groundwater monitoring wells at the precinct. Whilst the soil results have been compared to applicable guidelines within tables of the report, no further interpretation of soil data has been conducted.

Key findings of the assessment

Baseline shallow groundwater quality beneath the Employment Precinct

- Of the 27 new groundwater well locations:
 - Four (4) encountered groundwater within fill material.
 - Twenty-three (23) encountered groundwater within the Port Melbourne Sands.
 - These observations are consistent with the regional geological maps of the area.
- We have not been provided with borelogs for the 14 existing groundwater wells that were sampled during this assessment, however, we have obtained survey data for 12 of these wells, and measured the total well depth of all 14 existing groundwater wells. The existing groundwater wells have been installed to depths between 1 and 7.45 metres below top of casing (mBTOC).
- Field observations and bore logs indicated that fill and the Port Melbourne Sands are interconnected.
- SWL's were reported to range between 1.213 and 3.417 metres below top of casing (mBTOC). This variation across the site is expected due to the presence of former landfills/quarries, extensive sewer networks, former wetland areas and close proximity to the Yarra River.
- In a regional context, the shallow groundwater flow-paths within fill material and the Port Melbourne Sands are likely to flow towards the north based on the results of the gauging program.
- There may be a groundwater high/divide in the southern portion of the Employment Precinct, with groundwater north of the high flowing predominantly towards the Yarra River, and groundwater to the south flowing towards Hobsons Bay. This would not be surprising given the two different water bodies will both influence groundwater. However, this high/divide cannot be confirmed until further groundwater gauging events are conducted across the Fishermans Bend area. A GME across the whole of Fishermans Bend planned for July 2017 will assist with this.
- 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. Various precinct activities and surface coverage can also affect the extent of recharge of the shallow aquifer.

- Shallow underground infrastructure can 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). However, given the shallow depth of the upper unconfined aquifer, it is unlikely that deep underground infrastructure >10 metres below ground level (mBGL) has a significant impact on flow direction.
- In general, the major cation and anion compositions within shallow groundwater beneath the precinct was found to be mixed and variable, indicating that there are a number of shallow groundwater signatures (i.e. types).
- The *State Environment Protection Policy (Groundwaters of Victoria) 1997* (SEPP GoV) defines beneficial uses of groundwater on the basis of the classification of a groundwater segment which is based on background salinity, measured as total dissolved solids (TDS). As such, based on the laboratory reported TDS values:
 - 6 groundwater bores corresponds with Segment A1 (i.e. TDS 0 – 500mg/L).
 - 9 groundwater bores correspond with Segment A2 (i.e. TDS 501 – 1,000mg/L).
 - 18 groundwater bores correspond with Segment B (i.e. TDS 1,001 – 3,500mg/L).
 - 6 groundwater bores correspond with Segment C (i.e. TDS 3,501 – 13,000mg/L).
 - No groundwater bores correspond with Segment D (i.e. TDS >13,000mg/L).

Preliminary Conceptual Site Model (PCSM)

Based on the site setting, topography and findings of this baseline groundwater assessment, groundwater is considered likely to flow in a northerly direction. Groundwater is therefore likely to discharge to the Yarra River and place the following potential surface water receptors at risk:

- Aquatic ecosystems and groundwater dependent ecosystems (GDE's) in the Yarra River.
- Users of groundwater for potable supply.
- Terrestrial ecology where groundwater is used for irrigation or stock watering purposes.
- Recreational users in the Yarra River.

In addition to the above surface water receptors, as groundwater is relatively shallow across the study area (i.e. between 1 and 3.2mBGL), there is potential for groundwater to come into contact with building foundations, basement structures and subsurface utilities. Vapours arising from groundwater contaminants may migrate through the subsurface and into buildings, which could result in potential risk to occupants of those buildings.

Regional concentrations of chemicals of potential concern (CoPC)

The CoPC detected at concentrations in excess of the most conservative guideline (Drinking Water) were statistically assessed, as these are considered to be the CoPC at the precinct which are most likely to trigger further investigation during future assessments/environmental audits. In doing so, data points associated with potential point-sources of contamination have been removed as there is insufficient data (evidence) to suggest these points are regionally significant. This enables the remainder of the data to be used to determine possible regional conditions.

Based on the data set that is considered to be regionally significant, the following CoPC were reported in concentrations that exceed Potable Water Supply (Drinking Water) criteria. They may therefore trigger further consideration in relation to future redevelopment of the precinct and may be considered as potentially regionally elevated.

- Identified in both the Part 1 Assessment (i.e. Wirraway, Sandridge, Lorimer and Montague Precincts) and the Part 2 Assessment (i.e. Employment Precinct):
 - Ammonia as N – Likely from a diffuse source or co-source that is regionally elevated.
 - Nitrate as N – Likely from a diffuse source or co-source that is regionally elevated.

- Chloride, Sulfate as SO₄, TDS, Arsenic, Manganese, Nickel and Iron – Considered regionally elevated and further assessment is required to rule these CoPC out as pollutants associated with diffuse sources.
- TRHC10-C40 – Likely present from a diffuse source or a number of point sources.
- Identified in Part 2 but not Part 1:
 - Sum of PFHxS/PFOS – Likely present from a number of different types of point sources (e.g. areas of former firefighting activities [within firefighting foams], landfilled areas and various manufacturing and industrial activities).
 - Total Chromium, Lead, Cadmium, Fluoride, Sodium and Aluminium – Considered regionally elevated and further assessment is required to rule these CoPC out as pollutants associated with diffuse sources.
- Select volatile CoPC detected during Part 1 and Part 2 are as follows:

Part 1 Results	Part 2 Results
<ul style="list-style-type: none"> • Benzene (4/38) • Chloroform (1/14) • 1,4-dichlorobenzene (2/14) • Chlorobenzene (2/14) • 1,2,4-trimethylbenzene (2/14) • 1,3,5-trimethylbenzene (1/14) • Isopropylbenzene (3/14) • n-propylbenzene (2/14) • Naphthalene (2/38) • Acetone (1/14) 	<p>Detected in both Part 1 and Part 2:</p> <ul style="list-style-type: none"> • Benzene (3/47) • Naphthalene (3/53) • Isopropylbenzene (1/27) • n-propylbenzene (1/27) • 1,2,4-trimethylbenzene (1/27) • 1,3,5-trimethylbenzene (1/27) <p>Detected in Part 2 but not Part 1:</p> <ul style="list-style-type: none"> • Ethylbenzene (1/47) • Benzo(a)pyrene (2/47) • 1,4-Dichlorobenzene (1/27) • 1,1-Dichloroethane (5/27) • cis-1,2-Dichloroethene (5/27) • 2-Propanone (Acetone) (1/23) • sec-butylbenzene (1/27)

Note: Benzene (4/38) = (4 detections of benzene out of 38 samples analysed for benzene)

Potential Point Sources of Contamination

The CoPCs detected in soil were compared to the CoPC detected in groundwater to establish if there is a potential for leaching from soil to groundwater at individual locations, which may in turn indicate that the CoPC in groundwater are associated with a point source rather than a regional issue.

There was insufficient evidence of a relationship between concentrations of CoPC in soil and groundwater to conclude that there are locations at the precinct where soil leaching has occurred.

Protected and precluded beneficial uses of shallow groundwater

Based on the TDS concentrations, the most sensitive segment of groundwater at the site that is likely to require protection in future assessments/environmental audits is Segment A1 (as defined by the SEPP GoV which requires the protection of Potable Water Supply – Desirable 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.

Evidence for a Groundwater Quality Restricted Use Zone (GQRUZ)

The information in this report provides EPA with evidence to consider when evaluating the requirement for a regional GQRUZ, including:

- Groundwater flow contours to inform physical dimensions of a potential GQRUZ.
- Comparison of reported concentrations of CoPC in groundwater to screening criteria relevant to each of the protected beneficial uses and identification of individual exceedences.
- Identification of potentially regionally elevated CoPC that may drive future environmental assessments/audits/CUTEP determinations.
- Identification of localised impacts that, while they are not necessarily regionally elevated, may warrant further investigation, either on a regional or site specific basis.

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was requested by the Environment Protection Authority Victoria (EPA) to undertake a groundwater quality assessment at the Fishermans Bend Employment Precinct (the precinct).

The precinct is located to the south-west of Melbourne's central business district (CBD) and covers an area of approximately 245 hectares (**Figure F1**). The precinct is bound by the Yarra River to the north and west, the Westgate Freeway to the south and Todd Road to the east. The precinct itself is mixed use between heavy and light industrial and commercial landholdings, as well as public parks. Notable land holders in the area include Boeing, Holden, Defence Science and Technology Organisation (DSTO) and Parks Victoria (Westgate Park).

The assessment focused primarily on characterising the condition of the shallow groundwater aquifer, to determine key factors that may be influencing its quality at a regional scale, and provide a summary of regional groundwater quality for future reference. The regional groundwater conditions described in this report may be considered when informing future development decisions at the precinct.

This report should be considered as a baseline groundwater assessment (only). Limited soil sampling was undertaken during installation of groundwater monitoring wells at the precinct. Whilst the soil analytical results have been compared to applicable guidelines within tables of the report, no further interpretation of soil data has been conducted.

The precinct is one of five precincts within Fishermans Bend. AECOM completed the initial regional baseline groundwater assessment in the other four precincts (Wirraway, Sandridge, Lorimer and Montague) in 2015 – 2016. Note that the 2015-2016 assessment is referred to throughout this report as Part1, while the 2017 assessment in the Employment Precinct is referred to as Part 2.

1.1 Objectives

The assessment generally focused on understanding the condition and characteristics of the shallow aquifer located beneath the precinct, with the primary objectives of the assessment as follows:

- Summarise the results of the groundwater monitoring in the Employment Precinct.
- Provide a Preliminary Conceptual Site Model.
- Determine the baseline shallow groundwater quality across the precinct.
- Provide possible regional concentrations of chemicals of potential concern (CoPC) based on the data obtained.
- Describe any potential point sources of contamination identified.
- Confirm the protected and precluded beneficial uses of shallow groundwater at the precinct.
- Provide evidence for the identification of a potential regional Groundwater Quality Restricted Use Zone (Regional GQRUZ).

1.2 Scope of Works

The general scope of works undertaken to achieve the objectives of this assessment was as follows:

- Installation of 27 new groundwater monitoring wells across the precinct, with soil sampling at each location and limited soil analysis.
- Survey of the top of each groundwater monitoring well casing (PVC) and ground surface elevation at each location.
- Gauging of standing water levels (SWL) within 42 groundwater monitoring wells (i.e. 27 new groundwater wells and 15 existing groundwater wells).

- Collection of field groundwater quality parameters from 42 groundwater monitoring wells including dissolved oxygen (DO), electrical conductivity (EC), pH, oxygen reduction potential (ORP) and temperature.
- Collection of groundwater samples from 42 groundwater monitoring wells and quality control and quality assurance (QA/QC) samples.
- Laboratory analysis of groundwater and quality assurance/quality control (QA/QC) samples.
- Data collation, assessment and reporting.

1.3 Recommendations from the Desktop Study (AECOM, May 2017)

The following list outlines the recommendations that were made in AECOM (May 2017), and how those recommendations have been addressed within this report:

- A Sampling and Analysis Quality Plan (SAQP) should be developed in consideration of the natural and anthropogenic influences on regional groundwater conditions.
 - AECOM prepared and submitted a SAQP for the groundwater assessment. The EPA reviewed this plan and required amendments were made prior to finalisation and execution of field investigations.
- A groundwater investigation be conducted on a regional scale to gain a holistic understanding of groundwater flow and possible contaminant movement via groundwater.
 - This Regional Groundwater Assessment has been prepared to address this recommendation.
- The best approach to characterising and assessing the regional groundwater quality of the precinct is to adopt a grid based approach to obtaining groundwater data and avoid the point sources identified to date.
 - As discussed in **Section 6.1.1**, groundwater wells were installed at locations based on a probability-based square grid sampling design,
- Sewers and drains should be investigated further if discrepancies in groundwater elevation are apparent near the sewer and drainage locations during future sampling works.
 - As discussed in **Section 8.3**, there is an apparent 'localised' anomaly within groundwater flow in the vicinity of groundwater well GW49. However, prior to further investigation of the drainage network in the vicinity of this well, all groundwater wells across all five precincts will be gauged over the course of one day in July 2017. Further investigation will be undertaken, should this anomaly be apparent again.
- The influence that large landholdings have on the potential status of groundwater, including flow direction and contamination status, should be further considered in a regional context following results of the next groundwater sampling program.
 - This point has been considered in the Preliminary Conceptual Site Model (PCSM) (**Section 3.0**).
- Further consideration of tidal influence on the regional groundwater quality including the impacts of regular flushing of water, salinity and migration pathways needs to be further assessed as part of future investigations. This will be best addressed by collection of site specific gauging and survey data.
 - The potential for tidal influence has been considered in multiple sections in this report where groundwater flow conditions have been discussed.

2.0 Site Description and Environmental Setting

The precinct is located in the south-west of the Melbourne Central Business District (CBD) and is bound by Lorimer Street to the north, Westgate Freeway to the west and south, and CityLink/Bolte Bridge to the east. The Yarra River is beyond Lorimer Street at the northern boundary of the precinct.

The precinct is generally used for heavy and light commercial and industrial purposes. The following table summarises the relevant precinct details.

Table 1 Site Information

Precinct	Area (ha)	Municipality	Current Zoning	Current Overlays
Employment	245	City of Melbourne	IN1Z C2Z PPRZ SUZ3 PUZ1 Road Zone	ESO

Notes:

Overlays: ESO = Environmental Significance Overlay,

Zoning: IN1Z = Industrial Zones, PPRZ – Public Park and Recreation Zones, PUZ1, PUZ2, PUZ4, PUZ6 = Public Use Zones, Road Zone = Road Zone Category 1, C2Z = Commercial 2 Zone, SUZ3 = Special Use 3 Zone.

2.1 Topography

AECOM has reviewed topography maps managed by the Department of Environment, Land, Water and Planning (DELWP) from a regional perspective. The topography across the entire precinct is generally relatively flat with a gradual decline in elevation towards the Yarra River to the east and north, and to Hobsons Bay located to the south of the precinct.

The elevation of the precinct was found to range from 0 - >4 metres Australian Height Datum (mAHD). This is likely to result in a slightly variable depth to the underlying groundwater table.

The main topographic observations made across the entire precinct include:

- The area immediately south of the precinct has been built up for construction of the Westgate Freeway.
- The gradient of the precinct continues to drop consistently towards the level of the Yarra River, which is located to the east and north of the precinct.
- There is a slight plateau at the southern end of the precinct at Westgate Park and the Melbourne International Karting Complex.

AECOM has also made the observations below when comparing the topography maps with the preliminary estimates of fill thickness provided in Golder (September, 2016). Note that the fill thickness estimates provided were developed using a high resolution LiDAR (Light Detection and Ranging) survey, and the observations made below are provided to assist in interpretation of groundwater flow across the precinct following groundwater gauging/sampling works.

- The precinct has been extensively influenced by historical filling across the entire precinct, with fill thickness estimated at 1 – 2 meters below ground level (mBGL) (approximately 1.7 to 0.7 mAHD) in the area bordering the Yarra River, and increasing to thicknesses in excess of 4 mBGL (approximately -1.3 mAHD) at the inland southern extent of the precinct.
- The topography of the precinct appears to be have been significantly influenced by historical filling activities. This fill thickness appears to follow a typically natural gradient towards the banks of the Yarra River.

- The topography to the south of the precinct appears to have large fill thicknesses (up to 4-5 m in thickness) influenced by historical filling activities along the freeway and in areas where quarrying and excavations for construction have historically occurred. Historical operating landfills would have a range of fill material including, but not limited to putrescible and industrial waste (Golder, September 2016).
- The topography of the former Commonwealth Aircraft Corporation (CAC) Airfield and Runways indicates that low lying areas of the runway were elevated with fill material (including along Todd Road), and further areas in the central precinct were also infilled up to 4m to support industrial expansion (Golder, September 2016). The source of the fill material in these locations is not known.

2.2 Geological Conditions

The precinct is located in the Yarra Delta, which is comprised of a number of flat lying sedimentary deposits. Together these deposits are known as the Yarra Delta Group.

The Yarra Delta Group is described as dipping in a south-westerly direction due to an erosion surface which has been cut into the Tertiary and Silurian aged formations underlying the Yarra Delta Group (Nelson, 1996).

As described below, the precinct is located above the Yarra Delta Group on Recent Quaternary aged sediments likely to have been deposited by the Yarra River within the past 2 million years.

According to the Melbourne 1:63,360 Geology Map and the Melbourne 1: 250,000 Geology Map, the majority of the precinct is underlain by Quaternary aged Port Melbourne Sands consisting of raised beach ridges, bedded and cross-bedded well sorted sand, shelly sand and minor silty or clayey sand. The Melbourne and Suburbs 1:31,680 Geology Map also indicate the presence of alluvial fields, mud flats, beach and estuarine deposits.

Based on our reviews of environmental audit (Audit) reports across the precinct (AECOM, May 2017), limited reviews of groundwater bores across the precinct, and the information obtained in Golder (2016), the fill thickness overlying the Port Melbourne Sands across the precinct is expected to be highly variable but generally between up to 2 meters (m) to greater than 4m thickness. AECOM note that fill is likely to be considerably thicker in areas where old landfills or quarries were present.

The fill on the precinct is likely to overlie the Quaternary aged Port Melbourne sand (Qrp). This has been described as raised beach ridges; bedded and cross-bedded well sorted sand, shelly sand, minor silty or clayey sand. The following geological units underlie the Port Melbourne Sand (from youngest to oldest):

- Coode Island Silt (Qri) which is described as silt, silty clay, sandy clay dark grey with minor peat and shell beds.
- The pleistocene aged Fishermans Bend Silt (Qpf) described as silty clay, pale grey to pale brown, with some minor sandy clay and silt the upper part of the formation is mottled and fissured.
- The pleistocene aged Moray Street Gravel (Qpg) described as quartz gravel and sand, with minor silt, clay and carbonaceous clay.
- The tertiary aged Newport Formation (Tmn) described as silt, grey and green, with calcareous silt, silty clay and minor limestone.
- Miocene aged Older Volcanics (Tvo) described as dense blue / black basalt.
- The Eocene aged Werribee Sand (Tew) described as sand, sandy and silty clay, with pyritic and lignitic quartz sand.

The bedrock below the precinct and the surrounding area is the Upper Silurian aged Dargile formation which is described as sandstone, siltstone, minor shaley siltstone which is thinly and regularly bedded.

During our geological review, we attempted to identify any potential ancient river channels or waterways at the precinct that could potentially influence preferential pathways. As described above, these features are not apparent in the study area. However, additional features (such as re-alignment

of the Yarra River to the north-west of the precinct, deep sewer lines and filled quarries) may influence preferential pathways.

2.3 Hydrogeological Conditions

According to the 12 Audit reports reviewed within 1 km of the precinct (AECOM, May 2017), the average depth to groundwater in the Port Melbourne Sands is approximately 2 meters below ground level (mBGL), which is approximately 0.7 mAHD at the precinct (based on the elevation data collected for this project). Given the topography of the precinct, regional groundwater within the local aquifer system is expected to flow to the north towards the Yarra River or west towards Port Phillip Bay.

According to the *Victorian Groundwater Beneficial Use Map Series: South Western Victoria, Water Table Aquifers* (DCNR, 1995), the concentration of total dissolved solids (TDS) in groundwater in the upper aquifer in the study area is expected to range between 1,001 mg/L and 3,500 mg/L which falls within "Segment B" according to the SEPP (GoV). The following protected beneficial uses are considered relevant under this segment:

- Maintenance of Ecosystems
- Potable mineral water supply
- Agriculture, parks and gardens
- Stock watering
- Industrial water use
- Primary contact recreation
- Buildings and structures

Based on the 12 Audit reports reviewed as part of AECOM (May, 2017), groundwater within the precinct has a high potential to be influenced by natural and anthropogenic preferential pathways (e.g. deep sewer lines, filled quarries, former swamps and low lying wetlands that have since been filled).

Brief hydrogeological descriptions for each of the geological units discussed above are listed in **Table 2** below. Classification and hydraulic conductivities have been sourced from Leonard (1992).

Table 2 Hydrogeological Descriptions for each Geological Unit

Geological Unit (Youngest to Oldest)	Brief Hydrogeological Description
Port Melbourne sand (Qrp)	Unconfined aquifer. Medium porosity. $K = 10^{-6}$ to 10^{-4} m/s.
Coode island silt (Qri)	Aquitard. Medium porosity. As there are sand layers and lenses, the horizontal hydraulic conductivity ($K_h = 10^{-8}$ to 10^{-7} m/s) is generally greater than the vertical hydraulic conductivity ($K_v = 10^{-9}$ to 10^{-8} m/s).
Fishermens Bend silt (Qpf)	Aquitard. Medium porosity. As there is fissuring, the vertical hydraulic conductivity ($K_v = 10^{-8}$ m/s) may be greater than horizontal hydraulic conductivity ($K_h = 10^{-9}$ to 10^{-8} m/s).

Geological Unit (Youngest to Oldest)	Brief Hydrogeological Description
Moray Street Gravel (Qpg)	High yielding confined aquifer. Medium porosity. Hydraulic conductivity is likely to range between 10^{-5} and 10^{-4} m/s.
Newport formation (Tmn)	Aquitard. Medium porosity. Hydraulic conductivity is likely to range between 10^{-9} to 10^{-7} m/s.
Older Volcanics (Tvo)	Confined aquifer. Low to high hydraulic conductivity depending on the extent of weathering ($K= 10^{-7}$ to 10^{-5} m/s).
Werribee sand (Tew)	Potentially high yielding aquifer. Medium porosity. Hydraulic conductivity is likely to range between ($K= 10^{-8}$ to 10^{-5} m/s).

3.0 Preliminary Regional Conceptual Site Model

3.1 Conceptual Site Model

The preliminary regional conceptual site model (PRCSM) presented in AECOM (May, 2017) has been further informed by the results and observations of this baseline groundwater assessment.

Natural background sources:

- Natural background concentrations of metals in soil and groundwater derived from the geological parent material, in accordance with the SEPP (10(2)(c)).
- Natural organic substances present in the environment as a result of organic matter decomposition (e.g. plant derived hydrocarbons).
- Natural background sources of CoPC are not pollution.

Regional diffuse (non-point) sources:

- Products of incomplete combustion (e.g. polycyclic aromatic hydrocarbons [PAH] and dioxins).
- Anthropogenic activities across the precinct may contribute to the regional concentration of both inorganics and organic compounds, including:
 - Deposition of atmospheric pollution.
 - Leakage and other emissions from motor vehicles on public roads.
 - Leakage from waste water utilities (stormwater and sewer).
 - The use of pesticide and fertiliser on public land.
 - Backfilling with uncontrolled fill during early land reclamation activities.

The above activities associated with regional diffuse (non-point) sources have the potential to result in one or more groundwater contamination plumes, or comingled plumes, particularly given the urban and commercial/industrial nature of the precinct area.

Exposure Pathways:

- Lateral migration of groundwater.
- Groundwater abstraction.
- Direct contact with *in-situ* groundwater.
- Vapours derived from groundwater may migrate through the subsurface and into overlying buildings and other structures.

Potential Receptors:

- Aquatic ecosystems and groundwater dependent ecosystems (GDE's) in the Yarra River and Hobsons Bay.
- Users of groundwater for potable supply.
- Terrestrial ecology and Agriculture, Parks and Gardens, where groundwater is used for irrigation or stock watering purposes.
- Recreational receptors in the Yarra River and Hobsons Bay.
- Buildings and structures in direct contact with groundwater.
- Occupants of building and structures where vapour intrusion may occur.

3.2 Chemicals of Potential Concern

The Chemicals of Potential Concern (CoPC) for regional groundwater at the precinct are summarised in **Table 3** based on the identified potential regional diffuse (non-point) sources and the anticipated background groundwater conditions.

Table 3 Chemicals of potential concern

Potential Regional Source	Common Groundwater CoPC	Potential Additional Groundwater CoPC
Land reclamation using uncontrolled backfill	<ul style="list-style-type: none"> Metals Total Recoverable Hydrocarbons (TRH) Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene (BTEXN) Polycyclic Aromatic Hydrocarbons (PAH) Chlorinated Volatile Organic Compounds (VOCs)/Semi-Volatile Organic Compounds (SVOCs) 	<ul style="list-style-type: none"> Phenolic compounds Per- and poly-fluoroalkyl substances (PFAS)
Pesticide and fertiliser use	<ul style="list-style-type: none"> Nitrates/ Nitrites Phosphates 	<ul style="list-style-type: none"> Organochlorine Pesticides (OCPs) Organophosphate Pesticides (OPPs) Phenoxy acid herbicides
Leaks from vehicles	<ul style="list-style-type: none"> Metals TRH BTEX PAH 	
Deposition of atmospheric pollutants	<ul style="list-style-type: none"> PAH Nitrogen Oxides (NOx)/ Sulfur Oxides (SOx) BTEX Metals 	<ul style="list-style-type: none"> PFAS
Leaks from utilities	<ul style="list-style-type: none"> Nutrients such as nitrate and ammonia Metals Total Dissolved Solids (TDS) pH 	<ul style="list-style-type: none"> Chlorinated VOCs/ SVOCs Phenolic compounds
Storage and use of chemicals in heavy industrial processes	<ul style="list-style-type: none"> Metals TRH BTEX PAH Chlorinated VOCs/ SVOCs 	<ul style="list-style-type: none"> Phenolic compounds PFAS
Geological Parent Material	<ul style="list-style-type: none"> Metals Sulfate, pH (Coode Island Silt) 	

Note:

VOCs and SVOCs are considered to be potentially associated with either regional diffuse sources or specific sources. As a conservative approach, we have incorporated these analytes in the common groundwater CoPC column.

3.3 Future Land Use Scenarios and Potential Receptors

Fishermans Bend has an anticipated future use as a mixed-use precinct with some medium to high density residential areas. The potential receptors to groundwater contamination are discussed below in the context of the protected beneficial uses of groundwater, as described in Table 2 of the *State Environment Protection Policy (Groundwaters of Victoria) 1997 (SEPP GoV)*

Table 4 Potential Receptors

Beneficial Use of Groundwater	Identified Receptors
Maintenance of Ecosystems	Based on the site setting, topography and findings of previous assessments, groundwater is considered likely to flow in a south to south west direction. Groundwater may therefore discharge to the Yarra River and Hobsons Bay and influence aquatic ecosystems in these water bodies.
Potable water supply	The precinct is located in an area of reticulated water supply which reduces the likelihood of extraction of groundwater for potable use. However, owing to the low TDS reported in some areas, this beneficial use of groundwater cannot be excluded. It should be noted that some groundwater bores installed in the precinct may not be registered/licenced, and bores such as these may be used for potable water supply.
Potable mineral water supply	The precinct is not located within a designated mineral water zone therefore this groundwater beneficial use is considered unlikely to be realised.
Agriculture, parks and gardens	The precinct is located in an area of reticulated water supply which reduces the likelihood of extraction of groundwater for irrigation use. However, owing to the low TDS reported in some areas, this beneficial use of groundwater cannot be excluded, particularly as we have obtained anecdotal evidence from local residents that indicates that groundwater has been used for irrigation purposes on sporting fields.
Stock watering	The precinct is located in an area of reticulated water supply which reduces the likelihood of extraction of groundwater for stock watering use. Such a use is also considered unlikely to be realised under the anticipated future land use and urban setting. However, owing to the low TDS reported in some areas, this beneficial use of groundwater cannot be excluded.
Industrial water use	It is considered unlikely that following redevelopment industrial land uses will continue in the area and therefore this groundwater beneficial use is considered unlikely to be realised. Furthermore, it is considered likely that any groundwater extracted for industrial purposes would require treatment prior to use owing to the variable salinity. Whilst it is considered an unlikely beneficial use, it has been assessed as part of this project.
Primary contact recreation	Based on the site setting, topography and findings of previous assessments, groundwater is considered likely to flow in a south to south west direction. Groundwater may therefore discharge to the Yarra River and Hobsons Bay and be in contact with recreational users of these waterways. Additional and potential recreational users include people who use swimming pools filled with groundwater within residential properties.

Beneficial Use of Groundwater	Identified Receptors
Buildings and structures	Groundwater is relatively shallow across the study area and has the potential to come into contact with building foundations, basement structures and subsurface utilities. Vapours derived from groundwater may migrate through the subsurface and into buildings.

4.0 Regulatory Setting

4.1 EPA and the Environment Protection Act

In Victoria, protection of the environment is regulated by the Environment Protection Authority Victoria (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.

4.2 State Environment Protection Policy

State Environment Protection Policies (SEPP) are subordinate legislation and provide 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.

Whilst the soil assessment is not the primary assessment of this project, the *State Environment Protection Policy - Prevention and Management of Contamination of Land* [SEPP (PMCL)] should also be noted, as it provides the framework for the protection of land and associated beneficial uses throughout Victoria.

These SEPPs are discussed in the following sections.

4.2.1 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 by State Environment Protection Policy (SEPP) to be a beneficial use.

The SEPP (GoV) defines beneficial uses of groundwater on the basis of the classification of a groundwater segment which is based on 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 identify Groundwater Quality Restricted Use Zones (GQRUZ) where one or more beneficial uses are precluded due to contamination or pollution. 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, and in accordance with clause 19(2)(b), groundwater must be cleaned up to the extent practicable (CUTEP).

4.2.2 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 River or Hobsons Bay.

4.2.3 SEPP Prevention and Management of Contamination of Land (SEPP PMCL)

The Victorian Government (June 2002) *State Environment Protection Policy - Prevention and Management of Contamination of Land* [SEPP (PMCL)] (varied in 2013) provides the framework for the protection of land and associated beneficial uses throughout Victoria. This policy allows for a consistent approach to the prevention of contamination of land, and clean-up of pollution of land in Victoria, and sets environmental quality indicators and objectives for each beneficial use. The SEPP (PMCL) defines certain land use categories and associated beneficial uses of land to be protected.

It should be noted that regardless of the proposed or potential future site use, in order to issue a Certificate of Environmental Audit (CoEA) for a site, an assessment of all beneficial uses of land is required. These land use scenarios defined in SEPP (PMCL) are as follows:

- Parks and reserves
- Agricultural
- Sensitive use (high density)
- Sensitive use (other)
- Recreation/open space
- Commercial
- Industrial

The beneficial uses that are protected for a site where any land use is being assessed are as follows:

- Maintenance of ecosystems
- Human health
- Buildings and structures
- Aesthetics
- Production of food, flora and fibre

4.3 National Environment Protection Measure

The National Environment Protection Council (NEPC) *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM) is the primary 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.

4.4 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 that 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.

4.4.1 EPA Publication 759.3

EPA Publication 759.3 *Environmental auditor (contaminated land): Guidelines for issue of certificates and statements of environmental audit* (December 2015) is relevant to this project as it includes guidance to auditors regarding expectations and interpretation of CUTEP 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.

4.4.2 EPA Publication 840.2

EPA Publication 840.2 *The Clean Up and Management of Polluted Groundwater* (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.

4.4.3 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.

4.4.4 Other Relevant Publications

Other relevant EPA Publications include, but are not necessarily limited to, the following:

- Environment Protection Authority (EPA) Victoria, 2009. *Industrial Waste Resource Guidelines 621 (IWRG621) – Soil Hazard Categorisation and Management*.
- EPA Victoria, 2009b. IWGR701 – *Sampling and Analysis of Waters, Waste Waters, Soils and Waste*.
- EPA Victoria, 2009c. IWGR702– *Soil Sampling*.
- EPA Victoria, 2006. EPA Publication 668 – *Hydrogeological Assessment (Groundwater Quality) Guidelines*.
- EPA Victoria, 2000. EPA Publication 669 – *Groundwater Sampling Guidelines*.

5.0 Beneficial Uses and Environmental Quality Criteria

5.1 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.

5.2 Land

As described in **Section 6.1.3**, limited soil analysis was undertaken during installation of groundwater monitoring bores to ascertain some preliminary data within fill material across the precinct. Soil results are listed against a number of guidelines within **Appendix A** for reference, however, no further interpretation of soil data has been conducted.

The SEPP PMCL provides a statutory framework for protecting people and the environment from the effects of contamination. Note that the SEPP (PMCL) was varied on 26 September 2013 to reflect the 2013 amendments to the NEPM 1999 for the Assessment of Site Contamination. The SEPP provides a list of beneficial uses to be protected under any given land use, as seen in **Table 5**.

Whilst this assessment involves only limited laboratory analysis of soil, a brief description of each soil quality objective is described in the following sub-sections.

Table 5 Protected Beneficial Uses of Land

Beneficial Use	Land Use						
	Parks and Reserves	Agricultural	Sensitive Use		Recreational / Open Space	Commercial	Industrial
			High Density	Other			
Maintenance of ecosystems							
Natural ecosystems	✓						
Modified ecosystems	✓	✓		✓	✓		
Highly modified ecosystems		✓	✓	✓	✓	✓	✓
Human health	✓	✓	✓	✓	✓	✓	✓
Buildings and structures	✓	✓	✓	✓	✓	✓	✓
Aesthetics	✓		✓	✓	✓	✓	
Production of food, flora & fibre	✓	✓		✓			

5.2.1 Maintenance of Ecosystems

Schedule B1 of the NEPM 1999 (as amended 2013) provides ecologically based investigation levels (EILs) for the protection of terrestrial ecosystems for common contaminants in soil based on a species sensitivity distribution (SSD) model developed for Australian conditions.

The NEPM 1999 (as amended 2013) contains EILs for a relatively small number of contaminants including arsenic (As), copper (Cu), chromium II (CrII), dichlorodiphenyltrichloroethane (DDT), naphthalene, nickel (Ni), lead (Pb) and zinc (Zn). Ecological Screening Levels (ESLs) are also provided in the NEPM (as amended 2013) for TPH, BTEX and benzo(a)pyrene (B(a)P). Both EILs and ESLs relate to the three generic land use settings as follows:

- Areas of ecological significance
- Urban residential areas and public open space
- Commercial and industrial land uses

Other alternative reference criteria can be referred to if justifiable and suitable for the site setting.

5.2.2 Human Health

Schedule B1 of the NEPM 1999 (as amended 2013) provides health investigation levels (HILs) for a broad range of metals and organic substances. The HILs are applicable for assessing human health risk via all relevant pathways of exposure. The HILs are generic to all soil types.

It is important to note that the HILs are generic assessment criteria designed to be used in the first stage (Tier 1 or 'screening') of an assessment of potential risks to human health from chronic exposure to contaminants. As per NEPM 1999 (as amended 2013), they are intentionally

conservative and are based on a reasonable worst case scenario for the following four generic land use settings:

- **HIL A:** Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry), also includes children's day care centres, preschools and primary schools.
- **HIL B:** Residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats.
- **HIL C:** Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves) which should be subject to a site-specific assessment where appropriate.
- **HIL D:** Commercial/industrial such as shops, offices, factories and industrial sites.

Levels slightly in excess of the HILs do not imply unacceptability, or that a significant health risk is likely to be present. Exceeding a HIL means further investigation is required and not 'risk is present, clean-up required'.

Schedule B1 of the NEPM 1999 (as amended 2013) also provides health screening levels (HSLs) for selected petroleum compounds and fractions, and are applicable to assessing human health risk via the inhalation and direct contact pathways. The HSLs depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structures. They apply to different soil types, and depths below surface to greater than 4mBGL. Further detail on their use is provided in Friebel, E and Nadebaum, P (September 2011) *Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater, CRC CARE Technical Report no. 10, CRC for Contamination Assessment and Remediation of the Environment, Adelaide Australia* (CRC CARE 2011).

5.2.3 Buildings and Structures

The SEPP (PMCL) states that the contamination must not cause the land to be corrosive to or adversely affect the integrity of structures or building materials.

The exposure classifications for concrete piles and steel piles outlined in Australian Standard 2159-2009 "Piling-Design and Installation" (AS2159) have been considered during this assessment. AS2159 provides exposure conditions for sulphates (expressed as SO₄), chlorides and pH in order to assess soil conditions under an exposure classification.

5.2.4 Aesthetics

According to the SEPP (PMCL), contamination must not cause the land to be offensive to the senses of human beings. Although this is a subjective parameter, aesthetic issues relating to the site may include discoloured soil (stained from spills, containing coloured waste, for example oil or carbon black), malodorous soils, abnormal consistency or soil containing waste (such as foundry slag, ash, bricks and concrete).

5.2.5 Production of Food, Flora and Fibre

For the protection of beneficial use 'food flora and fibre' it would be appropriate to adopt the same criteria as for the beneficial use maintenance of ecosystems.

5.3 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, AECOM has referenced the following groundwater quality objectives 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 ranges of relevant CoPC.

Table 6 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 precinct 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/ARMANZ (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 (NHRMC 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"> • World Health Organisation (2011) Guidelines for Drinking-water Quality (WHO, 2011) United States Environmental Protection Agency Regions 3, 6 and 9 (as amended from time to time) <i>Regional Screening Levels for Chemical Contaminants at Superfund Sites</i> (USEPA, November 2015)

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 • WHO (2011) • 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 an investigation level (IL) for this beneficial use - Table 5.10 in ANZECC 1992 can be used.</p> <p>Where neither ANZECC 1992 or 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 HSLs</p>

6.0 Field Investigation

A Sampling and Analysis Quality Plan (SAQP) was developed to outline the methodology for collecting groundwater data to achieve the nominated data quality objectives (DQO's), and was provided to EPA prior to commencement of field work. This report summarises the adopted methodology.

The following work was conducted prior to the commencement of the field program:

- Development of a site-specific health and safety plan (HASP).
- Application for, and receipt of, groundwater well licenses from Southern Rural Water (SRW) (**Appendix B**).
- Application for, and receipt of, permits from the City of Melbourne to occupy the footpaths/roadways (**Appendix B**).
- Implementation of a letter box drop to properties located in the vicinity of field activities being undertaken.

The field program was conducted between 19 April and 24 May 2017 as follows:

- Drilling and installation of 27 groundwater wells and soil sampling:
 - 19 – 26 April 2017.
- Development of the 27 new groundwater wells:
 - 24 April and 3 May 2017 (non-consecutive days).
 - Note that the additional 14 pre-existing wells (of the total well network – 41 groundwater wells) could not be accessed during the development phase. Although not all of the groundwater bores (new and existing) could be developed, they were all purged carefully during sampling and stabilised prior to the collection of samples.
- Groundwater gauging of all publicly accessible wells:
 - 8 May 2017 (within a 4 hour period).
- Groundwater sampling of all 41 wells (32 in total):
 - 8 – 17 May 2017.
- Survey of groundwater monitoring well casings and ground surface elevations of all publicly accessible wells:
 - 22 – 24 May 2017.

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

6.1 Field Methodology

The groundwater field investigation included the following general activities:

- Groundwater bore installation and soil sampling, which involved:
 - Pre-installation inspections to assess the ground surface at each proposed groundwater bore location.
 - Subsurface service clearance of each groundwater bore location.
 - Non-destructive digging (NDD) at each groundwater bore location.
 - Drilling and installation of 27 groundwater monitoring bores at the locations presented on **Figure F1**.
 - Detailed geological logging of each borehole and documentation of the construction details for each new monitoring bore.
 - Development of the 27 groundwater bores to remove sediment and promote connection between the bore and the surrounding aquifer.

- Visual assessment and measurement of volatile gases within fill material and soil at multiple depths within each groundwater bore location.
 - Collection of soil samples at multiple soil horizons (i.e. depths) at each newly installed groundwater well, and analysis of soil samples from 9 groundwater well locations in an approximately even distribution across the precinct to establish a preliminary soil data within common fill types in the study area.
 - Reinstatement and management of spoil.
 - Survey of the top of each groundwater monitoring bore casing and ground surface elevation at each location to allow groundwater elevations to be calculated, and groundwater flow directions and gradients to be estimated.
- Groundwater sampling program:
 - Equipment calibration.
 - Groundwater gauging.
 - Groundwater sampling.
 - Decontamination of groundwater gauging and sampling equipment.
 - Sample transport and laboratory analysis.

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

6.1.1 Rationale for groundwater bore placement

Groundwater bores were installed at locations on a probability-based square grid sampling design, which has the following advantages (NEPM 1999 (as amended 2013)):

- The design is unbiased.
- It provides the ability to calculate uncertainty associated with estimates.
- It provides reproducible results within uncertainty limits.
- It provides the ability to make statistical inferences.
- It can handle decision error criteria.
- Grid sampling can be used to define spatial patterns or trends over time.

Where point sources of contamination were known or inferred (based on the available information), select locations in the grid layout were adjusted and moved up hydraulic gradient of these known or inferred point sources in an effort to identify regional conditions, instead of isolated contamination associated with point sources. In addition, some locations had to be moved due to access constraints and/or the presence of underground services. The final sampling pattern, following adjustments for the above constraints, resulted in a good distribution and coverage across the precinct for the purposes of this assessment. It is noted that there is a gap in groundwater bores within grids E5, H3, J3 and K3 as access was constrained. This is not considered to impact the conclusions of this report, due to the close proximity of other wells within adjacent grids.

Table 7 provides a summary of each groundwater bore location. The survey report of each groundwater bore is provided in **Appendix C**.

Table 7 Summary of Groundwater Monitoring Bores

Well ID	Grid Reference	Eastings	Northings	Elevation TOC (mAHD)	Total Well Depth (mBTOC)	Total Well Depth (mAHD)	Water Level (mBTOC)	Water Level (mAHD)
GW39	A4	315266.55	5811089.92	1.94	6.740	-4.800	1.534	0.41
GW40A/C	A5	315254.09	5810896.88	2.19	3.860	-1.666	1.664	0.53
GW41	B3	315652.79	5811410.02	1.88	3.770	-1.893	1.578	0.30
GW43	H1	317136.82	5812044.18	2.17	4.460	-2.293	1.836	0.33
GW44	B5	315732.45	5810920.84	2.98	6.140	-3.159	2.595	0.39
GW45	B6	315681.68	5810678.12	3.72	5.030	-1.312	2.264	1.45
GW46	C3	315977.41	5811489.27	2.34	3.960	-1.620	2.167	0.17
GW47	C2	315884.15	5811686.55	1.92	3.220	-1.302	1.751	0.17
GW48	C4	315865.15	5811133.39	2.33	3.690	-1.358	2.060	0.27
GW49	C5	315843.92	5810975.08	4.77	7.450	-2.684	3.048	1.72
GW50	C6	315878.03	5810732.38	3.30	4.170	-0.873	2.946	0.35
GW51	D2	316122.65	5811753.17	2.34	3.270	-0.931	1.944	0.40
GW52	D3	316170.42	5811492.44	2.69	3.920	-1.232	2.273	0.42
GW53	D4	316085.28	5811301.56	2.62	3.820	-1.204	2.481	0.13
GW54	D5	316181.54	5811047.99	3.45	4.760	-1.313	3.028	0.42
GW56	D6	316180.3	5810748	1.95	3.980	-2.028	1.404	0.55
GW57	E1	316295.71	5811878.79	1.79	1.570	0.221	1.213	0.58
GW61	E6	316372.13	5810788.84	3.19	4.010	-0.824	1.321	1.87
GW62	F1	316629.77	5811943.45	1.98	4.220	-2.236	1.624	0.36
GW65	F5	316541.09	5810957.84	4.34	4.960	-0.621	3.417	0.92
GW67	G1	316858.86	5812024.37	2.10	4.000	-1.899	1.753	0.35
GW69	G4	316844.56	5811155.92	3.83	3.900	-0.067	2.700	1.13
GW70	H2	317043.31	5811774.92	2.05	3.600	-1.546	1.345	0.71
GW72	H4	317213.88	5811273.01	3.36	3.940	-0.577	2.408	0.96
GW73	I2	317394.88	5811674.82	2.96	4.560	-1.604	2.367	0.59
GW74	I3	317328.25	5811554.1	3.01	4.090	-1.083	2.236	0.77
GW75	I4	317364.6	5811316.22	3.64	4.150	-0.513	2.667	0.97
GW76	J1	317520.73	5811885.61	2.26	5.890	-3.627	1.999	0.26
GW77	J2	317518.02	5811734.4	1.96	4.910	-2.954	1.860	0.10
GW80	K1	317862.16	5811922.68	2.058	5.000	-2.942	1.580	0.478
GW81	K2	317860.71	5811790.84	2.408	5.000	-2.592	1.980	0.428

Well ID	Grid Reference	Eastings	Northings	Elevation TOC (mAHD)	Total Well Depth (mBTOC)	Total Well Depth (mAHD)	Water Level (mBTOC)	Water Level (mAHD)
GW82	I1	317326.53	5812100.49	1.887	5.000	-3.113	1600	0.287
MW9A1	E3	316261.7	5811361.2	2.775	4.880	-2.105	2.238	0.537
MW1371_02	E4	316323.3	5811110.3	3.208	3.650	-0.442	2.648	0.560
DAMW5_02	F2	316531.3	5811609.4	2.157	2.470	-0.313	1.610	0.547
MW1333_02	F4	316569.1	5811151.1	3.356	5.290	-1.934	2.082	1.274
GMW02	G2	316811.3	5811741.1	2.039	2.700	-0.661	1.526	0.513
GMW03	G3	316918.4	5811419	3.178	3.440	-0.262	1.800	1.378

Notes:

mBTOC = meters below top of casing

mAHD = meters Australian Height Datum

SWL = Standing Water Level

Locations that could not be surveyed due to access constraints – GW42 (Boeing), GMW83 (DSTO) and F3 (GMH). The lack of survey data at these three locations is not considered likely to alter the groundwater contours on a regional scale, however, it should be noted that the inferred flow direction map may be missing isolated groundwater flow anomalies at these locations (if present).

6.1.2 Groundwater Bore Installation

Groundwater monitoring bores were constructed in accordance with the following relevant statutory guidelines:

- *Minimum construction requirements for water bores in Australia – Edition 3* (National Uniform Drillers Licensing Committee 2012).
- National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).

AECOM obtained groundwater monitoring bore construction permits from the licensing authority (SRW) prior to the commencement of installation (**Appendix B**).

Twenty-seven (27) groundwater bores were installed to depths ranging between 4.0 and 5.0mBGL using two drill rigs. Each drill rig was supervised by an AECOM staff member experienced with drilling supervision as well as the geological profile across the precinct.

Every location was cleared to at least 1.5mBGL using non-destructive digging (NDD) techniques (e.g. hydro excavation and hand auger) prior to the commencement of mechanical drilling.

Given the potential to encounter volatile contamination, each monitoring well was initially drilled using push tubes to observe the geological profile and obtain undisturbed soil samples from select groundwater bore locations. Following use of the push tube, groundwater bores were drilled using hollow flight augers or sonic drill methods.

No non aqueous phase liquid (NAPL) was observed during drilling activities.

All soil cuttings and waste water derived from drilling groundwater monitoring bores were placed in appropriate labelled 200 L drums. Each drum was then manifested and removed by a licensed waste contractor. Please refer to **Appendix D** for a copy of waste transport documentation.

All bores were designed and constructed using 50 mm diameter PN 12 u-PVC casing with a lower section of slotted screen (also minimum PN 12 u-PVC).

During installation works, every effort was made to construct screens within the geological unit that groundwater was encountered, despite the likely connection between fill material and the Port Melbourne Sands. This was not possible at every location due to the groundwater strike sometimes occurring in Port Melbourne Sands immediately below fill material. Based on the results of this assessment, and as discussed in **Section 8.0**, the shallow groundwater at the precinct is interconnected between the fill material and Port Melbourne Sands, and as such, the screens are considered to be appropriate.

The gravel packs were extended approximately 0.5 – 1 m above the top each screen where possible, while the gravel pack material consisted of washed, well rounded gravel with grading bigger than the screen slot size.

A bentonite seal was installed at the top of each gravel pack. The purpose of the seal is to isolate the filter pack and screened interval from vertical migration of contaminants/fluids from the site surface.

The remaining space within each groundwater monitoring bore annulus was cement grouted to the surface. Grout consisted of a mixture of cement and bentonite powder.

All bores were completed with flush covers due to the potential for trip hazards and for traffic obstruction. Borelogs are provided in **Appendix E**.

Following groundwater bore drilling and installation, a surveying contractor recorded the locations and elevations of the top of casing and ground surface at each location to calculate groundwater elevations.

Survey data was recorded relative to datum GDA 94 and projection MGA 54, with elevation data recorded in metres Australian Height Datum (m AHD) (**Appendix C**).

6.1.3 Soil Sampling and limited analysis of soil samples

Visual assessment and measurement of volatile gases within fill material and soil was undertaken at multiple depths within each groundwater bore location to assess fill/soil type across the precinct. In addition, soil samples were collected for the purpose of laboratory analysis at various depths within 9 groundwater bore locations in an approximately even distribution across the site to establish a preliminary soil data within common fill types in the study area.

The soil data was also obtained to act as a possible reference point at locations where elevated concentrations of CoPC within groundwater were identified. **Section 8.5.2** provides a summary of analytes detected in groundwater and the association (if any) with potential soil leaching pathways. It is emphasised that the limited soil sampling and analytical program is secondary to the baseline groundwater assessment.

Twelve (12) primary soil (fill) samples, one blind duplicate sample and one split duplicate sample were analysed from 11 of the groundwater bore locations during the installation program. In addition, one sediment sample was collected from the saturated zone of each newly installed groundwater bore location and analysed for total organic carbon (TOC).

The soil profile at each location was assessed and recorded in the field. Observations of anthropogenic materials (e.g. waste) and field evidence of contamination (i.e. staining and/or odour) were noted. All soil observations were recorded on AECOM's standard field groundwater bore log sheets for uniformity in descriptions, presentation and to aid in any future interpretations. Please refer to **Appendix E** for a copy of the bore logs.

For each sample collected, additional soil was placed in a sealed plastic bag and screened for headspace vapours and the presence of volatiles, using a calibrated photoionisation detector (PID). The PID readings were found to range between 0 and 260 ppm. The headspace readings were taken at ambient temperature and were recorded on the bore logs. PID equipment calibration certificates are provided in **Appendix F**.

All soil samples were collected using a clean pair of disposable nitrile gloves and transferred into laboratory supplied glass sample containers. A new pair of nitrile gloves were worn for each sample collected.

Field duplicate samples and triplicate samples were prepared in the field by splitting the primary soil samples. In order to minimise the loss of volatiles, samples were not mixed or homogenised during collection or splitting. Each soil jar was filled to minimise the amount of headspace.

Please refer to **Section 6.1.8** for details on decontamination procedures.

6.1.4 Groundwater Bore Development

Following installation works, groundwater bores were developed using hand bailers and peristaltic pumping methods to vigorously agitate and remove stagnant groundwater and sediment within the wells and adjacent gravel pack.

Groundwater bore development was conducted until a minimum of three well volumes of water were removed, until the well had been pumped dry at least twice (low yielding wells only) or until groundwater parameters had stabilised (whichever occurred first). The bore volume was calculated using the water level measured within the well prior to development.

All purged groundwater was transported by a licensed waste disposal contractor for appropriate disposal at a licensed liquid waste facility. Please refer to **Appendix D** for a copy of waste disposal certificates.

Groundwater bore development logs were developed with groundwater observations including colour, turbidity, odour, presence of hydrocarbon sheen or phase separated hydrocarbons (if any) and other visual or olfactory evidence of contamination, depth to groundwater prior to and following development and the volume of water removed. Please refer to **Appendix G** for a copy of the well development records.

Each groundwater bore was allowed at least 7 days to equilibrate prior to sampling.

6.1.5 Groundwater Gauging Program

To minimise tidal influence during the groundwater gauging event, AECOM attempted to gauge all groundwater bores within 4 hours on 8 May 2017 using a team of two field staff prior to the groundwater purging and sampling program. However, 11 of the 41 groundwater bores could not be accessed during this time as they were either located on privately owned land (i.e. F3, DAMW_02, GMW83, GW42AC, MW1333_02, MW1371_02, MW9A1), or located in areas deemed to be unsafe to conduct works on the day due to nearby construction activities and/or extremely heavy traffic (GW69, GW70, GW76). Note that further gauging data was obtained from all 41 groundwater wells prior to sampling, when access was arranged on privately owned land and traffic was minimal.

Groundwater monitoring bores 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 bore. Gauging records were completed on site-specific field e-forms, as seen in **Appendix H**.

The water levels recorded during the gauging program were found to range between 1.57 mBTOC (GW57) and 7.45 mBTOC (GW49).

6.1.6 Groundwater Purging and Sampling

Groundwater purging and sampling was undertaken 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)

Reference was also made to the Government of Western Australia Department of Environmental Regulation, 2017, *Interim Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances* for PFAS analysis at 11 of the 41 groundwater bores. As such, the following materials were not used by the samplers, to minimise potential for cross-contamination:

- Clothing with stain-resistant, rain-resistant, or waterproof coatings/ treated fabric.
- Tyvek® clothing.
- Teflon® containing or coated equipment, including Teflon® lined lids on containers (High Density Polyethylene (HDPE), polypropylene or silicone was used).
- Glass sample containers with lined lids (polypropylene or HDPE was used).
- Aluminium foil (HDPE sheets were used).
- Self-sticking notes and similar office products.
- Waterproof paper, notebooks, and labels (standard paper was used).
- Detergents and decontamination solutions, such as Decon 90® Decontamination Solution (decontamination was undertaken using tap water followed by triple-rinsing with distilled or deionised water [Grade 3 or Millipore water])
- Reusable chemical or gel ice packs (ice double bagged in polyethylene bags was used)

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

The low flow pumps were placed approximately in the middle of the screened interval so as not to disturb the bottom of each well and allow for sufficient water above the pump.

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%. Please refer to **Appendix I** 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.

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 4 degrees Celsius or less prior to transit to the laboratory.

6.1.7 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. Courier consignment notes for each batch of samples were retained and the receiving laboratories were contacted the morning following dispatch to ensure their arrival. COC forms and sample receipt notifications (SRN) are provided in **Appendix J**.

6.1.8 Decontamination Procedure

Monitoring and sampling equipment (such as the interface probe and low flow sampling equipment) were decontaminated during the groundwater sampling process. For all groundwater wells that did not undergo PFAS analysis, sampling equipment was washed with Decon 90 solution, prior to being double rinsed (first with potable water and then with clean deionised water).

For all groundwater well locations that underwent PFAS analysis, decontamination was undertaken using tap water followed by triple-rinsing with deionised water.

6.1.9 Laboratory Analysis

All primary groundwater and soil samples were sent to chemical analytical laboratory ALS Environmental (ALS), while secondary samples were sent to Eurofins MGT. Each laboratory is NATA accredited for the analytical methodologies used. Please refer to **Appendix A** for a summary of the results and **Appendix J** for a copy of the laboratory transcripts.

Groundwater:

Groundwater samples underwent the laboratory analysis described in **Table 8**. 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*.

As seen in **Table 8**, both total and dissolved metals were analysed. It is common industry practice to report dissolved heavy metal results in groundwater. Dissolved metal groundwater samples go into acidified bottles to prevent metals from absorbing the inner surface of the bottle and potentially reduce the potential for the metal species to change. More often than not we don't report total metals in groundwater as it can overestimate the portion of the metals that are actually available, particularly if there is a lot of sediment in the sample. However, ANZECC (2000) indicates that the water manager should decide if dissolved or total metal analysis is appropriate for the assessment. ANZECC (2000) acknowledges that analysis of dissolved metal concentration will be more valuable.

AECOM analysed both total and dissolved metals in groundwater so that both sets of data can be compared.

Table 8 Groundwater Laboratory Analysis

Analyte	No. of Primary Samples
pH, TDS and TOC	41
Total and Dissolved 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])	41
Total Recoverable Hydrocarbon (TRH(C ₆ – C ₄₀))	41
Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene (BTEXN)	41
VOC Trace Suite (71 analytes) ALS Method Code: EP074-WF – Includes BTEXN	21
Polycyclic aromatic hydrocarbons (PAH)	41
Nitrogen Oxides (NO _x)/ Sulfur Oxides (SO _x)	41
PFAS Full Suite (28 Analytes)	11
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)	41

Soil:

Soil (fill) samples were analysed for the chemicals of concern listed in **Table 9**.

Table 9 Soil Laboratory Analysis

Analyte	No. of Primary Samples
TOC and moisture	27
Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	12
TRH(C ₆ -C ₄₀)	12
Full VOC Scan (70 Analytes) ASL Method Code: EP074 (A-H) – Includes BTEXN	8
PAH	12

6.1.10 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). Please refer to **Appendix K** for a register of the QA/QC samples.

The findings of the QA/QC review are summarised in **Table 10**.

Table 10 Quality Assurance and Quality Control Evaluation

Quality Assurance and Quality Control Evaluation			
Item	Soil Investigation	Groundwater Investigation	Adequate
Work plan/s	AECOM prepared a SAQP for the groundwater investigation. The EPA reviewed this plan and required amendments were made prior to finalisation and execution of field investigations. Adequate planning was undertaken for proposed field works.		Yes
Qualifications of field staff	AECOM has utilised staff who are suitably qualified and experienced.		Yes
Sample preservation	<p>Samples were placed into laboratory supplied containers before being placed on ice in an insulated cooler, while in transit to the laboratory. The laboratory supplied vessels were pre-preserved (where required) by the laboratory.</p> <p>The laboratory analytical certificates indicate that samples were preserved and attempts to chill samples were evident.</p>		Yes
Analytical schedule	On the basis of the site history and CoPC, we are of the opinion that the analytical program undertaken sufficiently characterises CoPC in groundwater at the precinct.		Yes
Laboratories used	The laboratories that were used are National Association of Testing Authorities (NATA) accredited for the analysis requested.		Yes
Equipment decontamination	All sampling equipment was decontaminated during field works. No evidence of cross-contamination has been identified.		Yes
Selection of investigation locations	The distribution of the assessment sampling locations was discussed with EPA prior to finalisation. We are of the opinion that they are suitable based on the site history, identified potential sources of contamination, and satisfactory for the purposes of the assessment.		Yes
Sampling density	Please refer to Section 6.1.1 .		Yes
Sampling methods	<p>Soil samples were collected using a hand auger or hand tools from push tubes.</p> <p>We are of the opinion that the sampling methods employed were adequate.</p>	<p>We used low-flow micro-purge sampling techniques for the collection of groundwater samples.</p> <p>We are of the opinion that the sampling method employed was adequate.</p>	Yes
Target depths	The depths advanced were sufficient to gain a preliminary understanding of CoPC distribution in soil across the precinct. Samples were also collected of fill material and natural soils.	The depth of the groundwater wells are considered to be adequate to assess the shallow groundwater conditions at the precinct.	Yes

Quality Assurance and Quality Control Evaluation			
Item	Soil Investigation	Groundwater Investigation	Adequate
Equipment calibration	A PID was used during the soil investigation works. Calibration certificates have been provided in Appendix F .	Water quality meters and interface probes have been used during the GME. Calibration certificates are attached in Appendix F .	Yes
Sample nomenclature	We utilised various forms of sample nomenclature to distinguish between soil samples and groundwater samples. We are satisfied that the labelling used is adequate to identify the soil or groundwater sampling location, depth and date of samples collected.		Yes
Field screening	Field observations of odour, staining and fill types were noted on the bore logs. In addition, soil samples were field screened for the presence of VOCs using a PID.	Groundwater Sampling Forms were prepared and are attached in Appendix I . These forms include water quality parameters such as pH, temperature, conductivity, dissolved oxygen and redox as well as an assessment of stabilisation during purging.	Yes
Chain of Custody (COC) documentation	AECOM prepared COC documentation for the soil and groundwater sampling programs and included these in Appendix J .		Yes
QC rinsate blanks	We collected rinsate samples during the soil investigation. At a rate of one per day of sampling (9 in total). The results for the rinsate samples are discussed in Appendix K . Based on the results, adequate decontamination was undertaken, and an adequate number of rinsate samples were collected.	We collected rinsate samples during the groundwater investigation at a rate of one per day of sampling (6 in total). Concentrations reported below the LOR for all analytes tested. Based on the results, adequate decontamination was undertaken, and an adequate number of rinsate samples were collected.	Yes
QC trip blanks	AECOM collected 13 trip blank samples during the soil investigation. Concentrations were reported below the LOR for all analytes tested. We are satisfied that cross-contamination has not occurred and that the data can be relied upon.	AECOM collected 10 trip blank samples during the soil investigation. Concentrations were reported below the LOR for all analytes tested. We are satisfied that cross-contamination has not occurred and that the data can be relied upon.	Yes

Quality Assurance and Quality Control Evaluation			
Item	Soil Investigation	Groundwater Investigation	Adequate
QC field duplicate and split sample collection density	AECOM collected duplicate and triplicate samples in accordance with AS4482.1, which recommends that duplicates are collected at a rate of 1 in 20 (5%).	AECOM collected duplicate and triplicate samples in accordance with AS4482.1, which recommends that duplicates are collected at a rate of 1 in 20 (5%).	Yes
QC field duplicate and split data precision	<p>Soil: Field duplicate RPDs were reported within control limits Field triplicate RPDs were reported within control limits with the exception of QC16 (GW43_4.00) for Iron, with an RPD of 35.29%.</p> <p>Groundwater: Field duplicate RPDs were reported within control limits with the exception of:</p> <ul style="list-style-type: none"> QC101_11/5/17 (GW48_11/5/17) for Ionic Balance (RPD 48.86%) QC106_120517 (GW52_120517) for Styrene (RPD 40%) and Ionic Balance (RPD %) <p>Field triplicate RPDs were reported within control limits with the exception of:</p> <ul style="list-style-type: none"> QC102_11/05/17 (GW48_11/5/17) for Total Dissolved Solids (RPD 76.75%), Styrene (RPD 66.67%), Nitrate (as N) (RPD 33.33%) and Nitrite (as N) (RPD 100%) QC107_120517 (GW52_120517) for 1,1-Dichloroethane (RPD 40%), cis-1,2-Dichloroethene (RPD 42.42%), Potassium (RPD 41.21%) <p>We consider that the minor RPD failures above do not affect the interpretation of the primary results.</p> <p>Overall, we are satisfied that there is sufficient data which meets the requirements of AS4482.1 to enable the analytical results to be considered precise.</p>		Yes
Laboratory internal QC procedures	<p>A review of laboratory internal QC procedures was undertaken in Appendix K.</p> <p>Elements such as duplicate sample RPD, laboratory control sample recovery, matrix spike recovery and laboratory blanks were reviewed. The findings indicate that the primary results reported by the laboratories could be relied upon.</p>		Yes
Holding times	Samples were extracted and analysed within recommended holding times.		Yes

Quality Assurance and Quality Control Evaluation			
Item	Soil Investigation	Groundwater Investigation	Adequate
Laboratory's LOR	<p>The laboratory LORs were below our adopted ILs in soil samples with the exception of two organic analytes.</p> <p>The chemical results for the broader organics suites did not indicate any elevated concentrations.</p> <p>Any departures are not considered to affect the outcome of this assessment.</p>	<p>The laboratory LORs were below our adopted ILs in groundwater samples with the exception of a number organic analytes.</p> <p>The chemical results for the broader organics suites did not indicate any elevated concentrations.</p> <p>Any departures are not considered to affect the outcome of this assessment.</p>	Yes
Completeness of data set	AECOM considers that the number of samples collected and chemicals analysed is sufficient for the purposes of this assessment.		Yes
Composites	No compositing of soil samples was undertaken.	Not applicable.	Yes

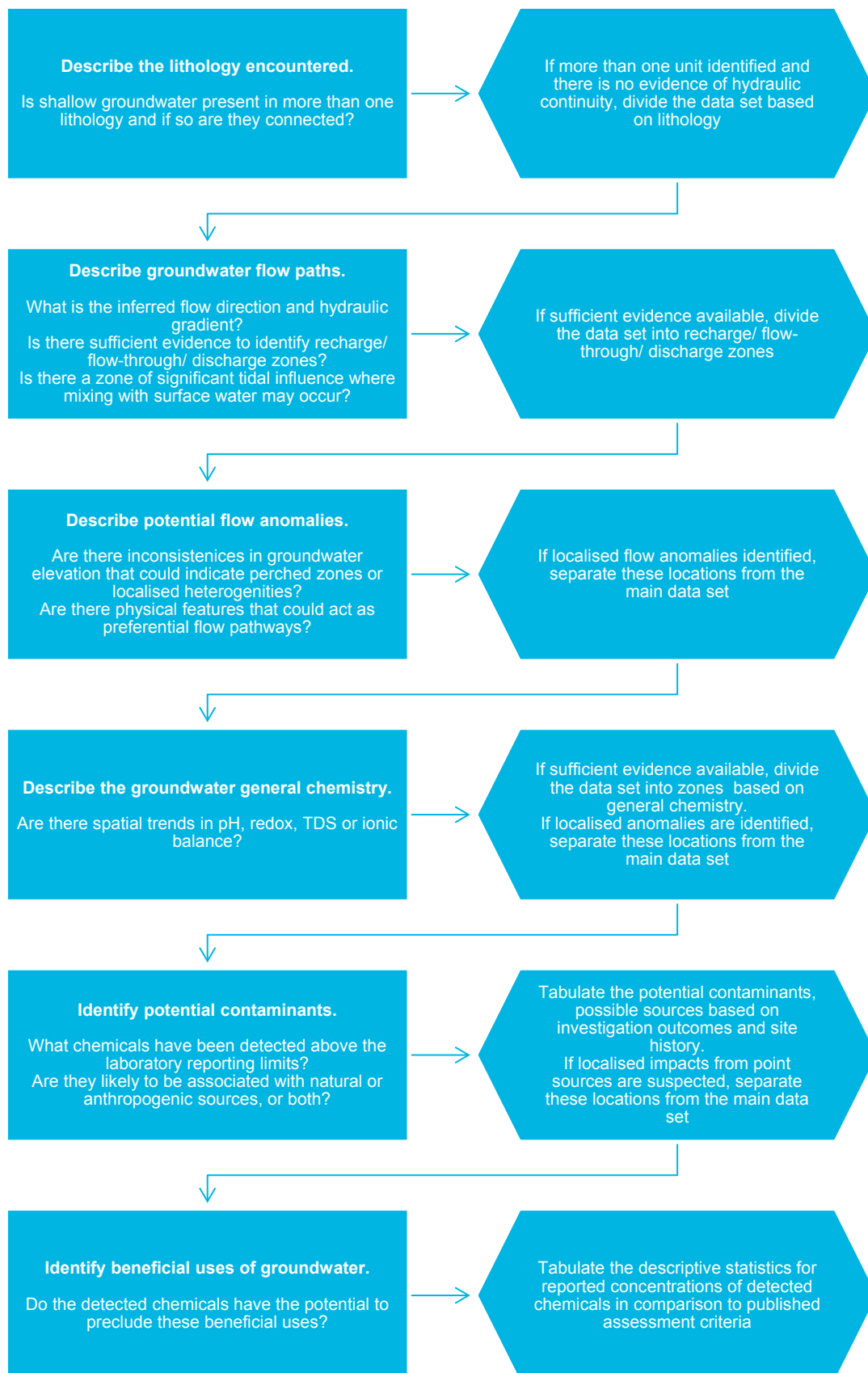
7.0 Assessment Framework

To achieve the project objectives, an assessment framework has been developed that aims to:

- Describe the physical-chemical condition of the shallow aquifer encountered.
- 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.
- Described 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 intended to be worked through in a step-wise manner to identify a representative data set that can be utilised as a point of reference for future environmental assessments at the site, and is described in the following flow diagram and **Sections 8.1 to 0**.

Chart 1 – Assessment Framework



8.0 Data Assessment

The following discussion of results follows the structure of the assessment framework that is provided in **Section 7.0**.

8.1 Lithology Encountered

8.1.1 Fill Material

Twenty-seven (27) new groundwater bores were drilled to a depth ranging between 4.5 and 5.5mBGL, with the majority being 5mBGL. The depth of fill material across the precinct ranged from 0.5mBGL (GW47) to 4.5mBGL (GW61). The average fill depth across the entire precinct was approximately 1.5mBGL with all locations reporting both fill and natural material.

Fill material was found to be deepest in the southern portion of the precinct extending west (GW61, GW65 and GW45), with a large volume of landfill material (to between 3 and 4.5mBGL) and odours being noted in this area (GW61 and GW65 in particular). There were no other significant general trends of fill thickness or distribution observed across the precinct.

Fill material was generally described as orange, brown, gravelly sands with a varying degree of inclusions such as rubble, concrete, brick, glass, coke, charcoal, ash, slag, plastic sheeting, electrical wire and scrap metal. It is noted that several of the groundwater bore locations recorded the presence of brick fragments with many having complete bricks and large concrete rubble.

With the exception of two locations that recorded a slight sulphur odour (GW65 and GW40) and one with a hydrocarbon odour (GW61), the fill material was recorded as having no odour or only a slight organic odour across the precinct.

Locations GW61 and GW65 appeared to contain landfill waste (as seen in **Plate 1**), which appeared to have an impact on the underlying natural material. These observations are consistent with what we would expect in this area given the inferred location of the historical landfill/quarry area.



Plate 1 – GW61

8.1.2 Natural Material

All 27 new groundwater bores across the precinct were found to contain natural material. The natural material observed is inferred to be Port Melbourne Sands (majority of locations). There is slight possibility of cross over between Coode Island Silt (CIS) within some of the locations where minor silts and shell inclusions were observed (GW47, GW75 and GW40). In these instances, it is noted that the contact between the Port Melbourne Sands and CIS (if present) is gradational rather than distinct.

The Port Melbourne Sands observed at the precinct can be generally described as brown, grey (sometimes mottled with orange), fine to coarse grained sands, with minor clay lenses. Examples of typical sands encountered during drilling across the precinct are shown in **Plates 2 and 3**.

Shell fragments were also noted in approximately half of the locations such as in those seen in Plate 3 (GW80). The observed shell grit is to be expected given the depositional nature of the geological environment. The natural material was noted as having no odour or a slight organic odour (GW76) and not the sulfidic odours usually associated with the CIS's suggesting that it is predominantly Port Melbourne Sands.



Plate 2 – GW72



Plate 3 – GW80

8.1.3 Lithology where groundwater was encountered

Table 11 identifies whether groundwater was encountered in fill or natural material. The following observations in relation to the presence of groundwater at the locations drilled can be made:

- Four (4) of the 27 groundwater bores encountered groundwater within fill material.
- Twenty-three (23) of the 27 groundwater bores encountered groundwater within the Port Melbourne Sands.
- Fifteen (15) locations (GW40, GW41, GW43, GW47, GW51, GW56, GW61, GW62, GW67, GW70, GW76, GW77, GW80, GW81, and GW82) reported SWL's between 1 and 2 meters below top of casing (BTOC).
- Ten (10) locations (GW45, GW46, GW48, GW50, GW52, GW53, GW72, GW73, GW74, and GW75) reported SWL's between 2 and 3mBTOC.
- Two (2) locations (GW54 and GW65) reported SWL's between 3 and 3.2mBTOC.

The above variation in standing water levels (SWL) is to be expected across the precinct due to the presence of former landfills/quarries, extensive (and undefined) sewer networks, former wetlands and proximity to the Yarra River. Based on the SWL's recorded during the gauging event, the data set should be considered as a whole for the purposes of this assessment. Prior to the consideration of additional variables (i.e. groundwater chemistry, tidal influence etc.), the data set indicates fill and the Port Melbourne Sands are interconnected.

For the purposes of the second phase of the data assessment process (**Section 8.2**), no groundwater bore locations will be removed from the data set.

Table 11 Inferred Lithology

Groundwater Bore	Fill Depth (mBGL)	SWL (mBTOC)	Lithology where groundwater was encountered
GW40	1.8	1.664	Port Melbourne Sands
GW41	0.9	1.598	Port Melbourne Sands
GW43	0.9	1.836	Port Melbourne Sands
GW45	3.1	2.264	Port Melbourne Sands
GW46	1.4	2.167	Port Melbourne Sands
GW47	0.5	1.696	Port Melbourne Sands
GW48	0.5	2.06	Port Melbourne Sands
GW50	0.8	2.946	Port Melbourne Sands
GW51	1.4	1.944	Port Melbourne Sands
GW52	0.7	2.273	Port Melbourne Sands
GW53	1.5	2.481	Port Melbourne Sands
GW54	1.3	3.028	Port Melbourne Sands
GW56	1.4	1.404	Port Melbourne Sands
GW61	4.5	1.321	Fill
GW62	1.1	1.624	Port Melbourne Sands
GW65	3.5	3.147	Fill
GW67	0.7	1.753	Port Melbourne Sands
GW70	0.7	1.345	Fill
GW72	0.7	2.408	Port Melbourne Sands
GW73	1.5	2.367	Port Melbourne Sands
GW74	2	2.236	Port Melbourne Sands
GW75	2	2.667	Port Melbourne Sands
GW76	2.1	1.999	Fill
GW77	1	1.86	Port Melbourne Sands
GW80	1.4	1.586	Port Melbourne Sands
GW81	1.4	1.979	Port Melbourne Sands
GW82	1.5	1.159	Port Melbourne Sands

8.2 Groundwater flow paths

8.2.1 Flow Direction

Flow of shallow groundwater across the precinct has been considered from a regional perspective for the purposes of this regional baseline assessment.

Under natural conditions, groundwater moves along flow paths from areas of recharge to: areas of discharge along surface water bodies; or to be uptaken by plants whose roots extend to near the water table. This section provides a preliminary view of the groundwater flow system across the employment precinct, and is based on one set of groundwater level gauging data.

In a regional context, the shallow groundwater flow paths in fill and in the Port Melbourne Sands across the precinct are in a northerly direction towards the Yarra River based on the gauging results obtained during the sampling program conducted between 8 and 17 May 2017 (**Figure 2**). The highest groundwater elevations (>1 m AHD) were observed around wells GW49, GW61, MW133_0.2 and GMW03. This is discussed further in **Section 8.3**.

A separate gauging event was undertaken on 8 May 2017 within the space of 4 hours to minimise the potential for tidal influence, however, 11 of the 41 groundwater wells could not be accessed during this time as they were either located on privately owned land (i.e. F3, DAMW_02, GMW83, GW42AC, MW1333_02, MW1371_02, MW9A1), or located in areas deemed to be unsafe to conduct works on the day due to nearby construction activities or extremely heavy traffic conditions (GW69, GW70, GW76). As such, the inferred groundwater flow direction is based on the gauging results obtained during sampling.

Note that the groundwater flow direction observed in the other four precincts during Part 1 works showed a southerly groundwater flow towards Hobsons Bay (AECOM, 2016). Thereby exhibiting a possible groundwater high/divide between the Part 1 and Part 2 wells (i.e. along Westgate Freeway). It would be beneficial to gauge all groundwater wells across all five precincts so as to provide greater clarity on regional groundwater flow at Fishermans Bend and it is noted that this is planned to occur in July 2017. However, based on the data available, and the presence of a historical landfill/quarry in the southern portion of the Employment Precinct, it is not unexpected to observe a groundwater high between the Employment Precinct and the other four precincts.

The shallow groundwater flowing in the fill material and Port Melbourne Sands is considered to be an unconfined aquifer and is likely to be recharged by direct infiltration of rainfall, leaking services, or flows from the Yarra River under high tide conditions.

In general terms, we would anticipate that tidal influence on groundwater is more likely to occur close to the northern boundary of the precinct, or in the western portion of the precinct, which is closer to the mouth of the Yarra River.

From a desktop review perspective, the western and northern areas of the precinct are also expected to contain groundwater that is more saline. It is understood that the rising and falling of the river will also likely result in some mixing of the groundwater in these areas in particular. As such, fluctuations in river elevation as a result of tidal movements variably result in groundwater discharge to the river or river discharge to groundwater, and therefore a zone of groundwater-surface water mixing exists along the river.

As described in AECOM (March, 2016), various precinct activities and surface coverage of land can also affect the extent of recharge of the shallow aquifer. As can shallow underground infrastructure which can 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).

Based on the lithology observed (**Section 8.1**) there is a slight possibility of hydraulic connectivity between Coode Island Silt (CIS) and the Port Melbourne Sands (i.e. GW47, GW75 and GW40). Hence, it is possible that a small component of the shallow groundwater discharge across the precinct would occur as leakage to CIS, however, it is anticipated that horizontal flow paths would dominate over vertical flow paths to the CIS due to the lower permeability of CIS.

The above assessment is very preliminary, as it is based on only one round of gauging data and using data collected across multiple days due to access constraints during the initial gauging

program. Further, it must be highlighted that the large precinct area and distance between groundwater wells is significant in an effort to establish an even spacing of wells across the precinct (i.e. a number of the groundwater wells are located >200m from each other), limiting more detailed assessment of groundwater elevations and flow paths. Note that the scope of work was limited to the assessment of 41 groundwater well locations, which in turn affected the proximity of wells to each other.

8.3 Potential groundwater flow anomalies

Based on AECOM (May, 2017) there are many physical features across the precinct that could act as preferential recharge/discharge features, including:

- Former swamps and wetlands.
- The sewer, drainage and stormwater networks across the precinct.
- Former quarries/landfills.
- Existing surface water bodies such as the freshwater and saline lakes of Westgate Park.

Generally, the groundwater flow paths are difficult to assess in the vicinity of Westgate Park lakes using the available data. Groundwater elevations in GW49 located adjacent to a known freshwater lake are high compared to the closest bores (GW48, GW44, GW50, GW54 and GW56). High elevations in this bore may reflect groundwater recharge by surface water from the lake in this area.

The elevation in GMW03 is also considered to be higher than immediately surrounding bores, however, it is not significantly higher than elevations in other bores in the southern part of the precinct (i.e. GMW69, MW133_0.2, GW61).

When reviewing the current data and previous data for the other four precincts to the south and east, there may be a groundwater high/divide in the southern portion of the Employment Precinct, with groundwater north of the high flowing predominantly towards the Yarra River, and groundwater to the south flowing towards Hobsons Bay. This would not be surprising given the two different water bodies will both influence groundwater.

Based on our assessment of the preliminary and limited gauging data available (and prior to the assessment of the general groundwater chemistry in **Section 8.4**), there is an apparent 'localised' anomaly within groundwater flow in the vicinity of groundwater bore GW49. As such, this location will be assessed separately in the following phases of the data assessment.

As described above, it would be valuable to gauge all groundwater bores across all five precincts over the course of one day, particularly as shallow groundwater has the ability to respond very quickly to rainfall events. This will be considered for future groundwater sampling events.

8.4 General chemistry of shallow groundwater

As seen in **Chart 1**, the groundwater bores sampled showed groundwater with a range of major ion compositions.

Overall, the variation in ionic chemistry observed in groundwater beneath the precinct may be influenced by some or all of the following:

- Proximity to the Yarra River.
- Geology (Fill, CIS, Port Melbourne Sands).
- Contamination (hydrocarbons, acids etc.).
- Other natural processes.

This section outlines the main points of interest with respect to ion compositions, with the aim of separating the groundwater data set (if/where needed) to ensure that any possible regional levels of CoPC identified at the conclusion of this assessment are identified within the same aquifer.

In general, the major cation composition within shallow groundwater beneath the precinct was found to be dominated by either calcium or sodium, or a mix of the two cations. No groundwater bores appeared to be dominated by magnesium.

The anion composition of shallow groundwater was typically dominated by bicarbonate, with some bores showing higher proportions of sulphate or chloride. It is noted that carbonate was not measured above the limit of reporting for any groundwater samples. The high proportions of bicarbonate, combined with the low TDS (fresh) of the majority of groundwater bores, may be due to recent recharge from rainfall or surface water. Further, the chloride proportions within groundwater bores were typically found to be higher in groundwater from the bores with higher salinity. These groundwater bores also tend to show higher sodium proportions.

In summary, apparent anomalous compositions include the following:

- High salinity and chloride – GW39, GW44, GW45, GW47, GW50, GW51 and GW62.
- High sulphate, high chloride and low pH – GW42AC, GW40A/C, and low pH in GW40A/C, GW42AC and GW43.
 - There is no borelog available to review for location GW42A/C as this bore is located within Boeing land. The above ionic chemistry observations may be due to this bore being installed within fill material, or they may be associated with contamination that was not picked up as part of this assessment, noting that the location did not undergo VOC analysis (which was conducted across the precinct based on an approximate even spatial distribution of analysis [approximately 50% of samples]). Note that VOC analysis will be undertaken on all groundwater wells in the GME conducted in July 2017.
 - Location GW40AC was not installed within fill material or Coode Island Silt (CIS), however, the ionic chemistry observations may also be associated with contamination that was not picked up as part of this assessment, as it also did not undergo VOC analysis.
 - There is no clear reason for the above ionic chemistry observations within groundwater at GW43 based on the borelogs or analytical results.
- Very low sulphate – GMW02, GW49, GW65, GW69, MW1333_02.

Laboratory pH and total dissolved solids (TDS) concentrations generally correlate well with the field measured pH and EC data. Field pH was found to range between 4.69 (GW40A/C) to 7.60 (GW69), while laboratory pH ranged between 5.07 (GW40A/C) and 7.83 (GW69). Laboratory TDS ranged between 124 (GW49) and 12,800mg/L (GW50). As seen on **Figure F5**, six (6) groundwater bores (F3, GMW03, GW42AC, GW49, GW70 and GW77) reported a TDS concentration <500mg/L.

A TDS concentration below 500mg/L in the shallow groundwater at the precinct is not considered to be an anomaly in the data set (on its own), particularly given the likely responsiveness of the shallow aquifer to natural events such as rainfall. Following review of the low TDS concentrations and reported fluoride concentrations (a possible indicator of a fresh water source) across the precinct, the only location that we believe *may* be representative of a fresh water source leaking from nearby service is DAMW5_02, as it has a very low TDS concentration and it is the only groundwater bore to report a fluoride concentration >1mg/L. However, there are not enough lines of evidence to support this hypothesis.

Location GW49 (with a TDS of 124mg/L) is in close proximity to groundwater bores GW44 and GW50 which reported TDS concentrations of 10,100 and 12,800mg/L respectively. All of these three groundwater bores are existing bores within Westgate Park, and as such, there are no borelogs available to review. Given the mounding that was also observed in this area and the variation in TDS concentrations, these three groundwater bores are considered to potentially represent anomalous groundwater conditions and will not be included in the data set for the assessment of background regional groundwater conditions.

In addition to this anomalous data, we make the following observations regarding the above three wells and other nearby groundwater wells:

- **GW49:**
 - Laboratory TDS of 124 mg/L, which is similar to field EC of 98 uS/cm.
 - The groundwater elevation is high compared to other wells (1.72 m AHD).
 - There is no borelog to review (and as such, the drilling and installation details are not known), however, the well was measured to be 7.45 m deep.
 - The high elevation and fresh TDS may reflect surface water infiltration, either from a pond or nearby services. As such, we recommend that this be confirmed during the gauging program undertaken as part of the next GME scheduled for July 2017.
- **GW44:**
 - The laboratory TDS is 10,100 mg/L which is high compared to field EC of 1,576 uS/cm.
 - Again, there is no borelog to review, however, it was measured to be 6 m in depth.
 - It has a low redox and a H₂S odour, which suggests there may be some CIS influence.
 - Overall, the field EC may be anomalous, and as such, we recommend that this be reviewed during the next GME scheduled for July 2017.
- **GW50:**
 - The laboratory TDS of 12,800 mg/L reflects the field EC of 19,7400 uS/cm.
 - This well has been installed to 5 m across fill and natural.
 - It is close to a saline pond.
 - The high TDS may be reflecting close proximity and connection to this pond.
- **GW45:**
 - The laboratory TDS of 4,900mg/L reflects the field EC of 8,330 uS/cm.
 - The groundwater elevation is high compared to other wells (1.45 m AHD).
 - This well has been installed to 5 m across fill and natural.
 - We recommend that the groundwater elevation is confirmed during the next gauging round.
- **GW56:**
 - The laboratory TDS of 6,130 mg/L (and major ion composition) appears to be high compared to the field EC of 955 uS/cm.
 - This well has been installed to 5m across natural.
 - We recommend that the EC and TDS are checked during the next GME to see if they are comparable.

When reviewing the low TDS values across the remainder of the precinct, it is difficult to conclude that any trends in the spatial distribution of fresh water are present (**Figure F5**).

Based on the laboratory reported TDS values:

- 6 groundwater bores corresponds with Segment A1.
- 9 groundwater bores correspond with Segment A2.
- 18 groundwater bores correspond with Segment B.
- 6 groundwater bores correspond with Segment C.
- No groundwater bores correspond with Segment D.

Based on the limited data set, it is not possible to establish a clear reason for the variation in TDS concentrations. As described in **Section 8.1**, all groundwater bores appear to be installed within either Port Melbourne Sands or fill.

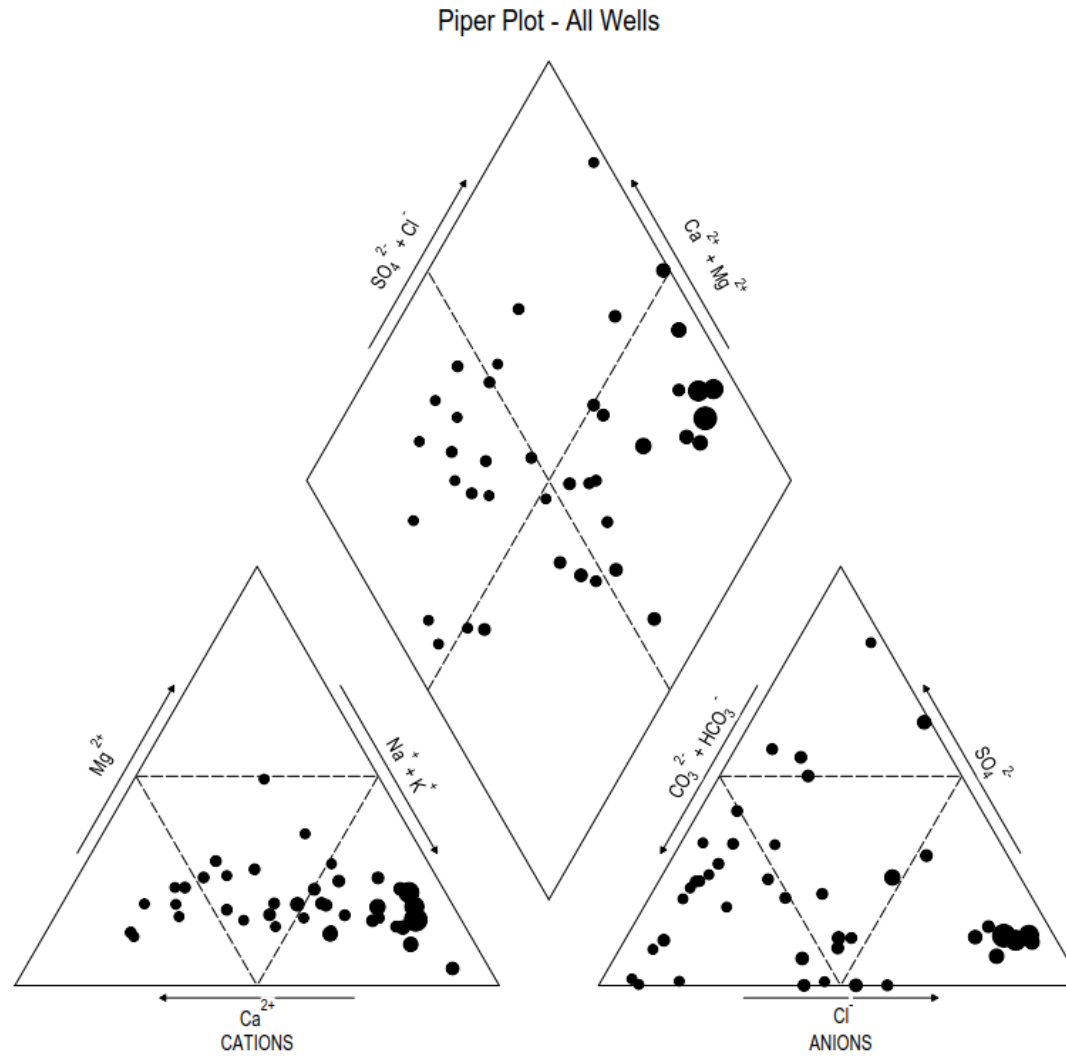


Chart 1

8.5 Detected Contaminants of Potential Concern

Both soil and groundwater results have been tabulated against applicable guidelines within **Appendix A**, whilst laboratory transcripts are provided in **Appendix J**.

8.5.1 Soil

As this is a regional baseline groundwater assessment, no interpretation of soil data has been provided. **Table 12** provides a brief summary of the detectable concentrations of CoPC in soil (including QA/QC samples) and may be a useful reference point for future soil and/or groundwater assessments, should they be conducted at the precinct.

The presence of PAH and heavy metals in soil could potentially be associated with uncontrolled backfill, leaks from vehicles and deposition of atmospheric pollutants which could represent a source of regional groundwater contamination. Volatile organic compounds (VOCs) may be associated with uncontrolled backfill or the storage/use of chemicals in heavy industrial processes. The locations where these CoPC were detected are as follows:

- GW40: TRHC10-C40, Total PAH, Al, Cr, Cr, Fe, Pb, Ni, Zn
- GW43: Al, Cr, Fe
- GW46: Al, Cr, Cu, Fe, Pb, Hg, Ni, Zn
- GW47: Al, Fe
- GW52: Al, As, Cr, Cu, Fe, Pb, Hg, Ni, Zn
- GW61: Al, As, Cd, Cr, Cu, Fe, Pb, Ni, Zn
- GW62: Al, Cr, Fe, Pb, Ni, Zn
- GW65: Benzo(a)Pyrene (BAP), Total PAH, Al, As, Cr, Cu, Fe, Pb, Hg, Ni, Zn
- GW70: Al, Fe, Pb
- GW75: Naphthalene (NAP) (VOC Suite), BAP, Total PAH, Al, As, Cr, Cu, Fe, Pb, Hg, Ni, Zn
- GW82: Al, Cr, Cu, Fe, Pb, Hg, Ni, Zn

Table 12 Summary of Soil Results (mg/kg)

Location	TRHC10-C40	Benzene	Total BTEX	NAP (VOC Suite)	BAP	Total PAH	Al	As	Cd	Cr	Cu	Fe	Pb	Hg	Ni	Zn
Guidelines																
Buildings and Structures		-	-													
Ecosystems Screening NEPM 2013 Residential & Public Open Space		50	-	170	0.7			100	10	200	100		1100	6.6	30	270
Health Screening NEPM 2013 Residential A		100	-	1400			77000	100	20	100	6000	55000	300	40	400	7400
Health Screening NEPM 2013 Residential B		140	-	2200			77000	500	150	500	30000	55000	1200	120	1200	60000
Vapour Intrusion 0-1m		0.5	-	3												
Vapour Intrusion 1-2m		0.5	-	NL												
Vapour Intrusion 2-4m		0.5	-	NL												
Vapour Intrusion >4m		0.5	-	NL												
GW40_0.50	110	<0.2	<0.2	<1	<0.5	1	4930	<5	<1	7	25	28200	73	<0.1	40	51
GW43_4.00	<50	<0.2	<0.2	<1	<0.5	<0.5	490	<5	<1	2	<5	840	<5	<0.1	<2	<5
GW46_0.50	190	<0.2	<0.2	<1	<0.5	<0.5	6290	<5	<1	44	188	21800	30	0.2	70	79
GW47_0.50	<50	<0.2	<0.2	<1	<0.5	<0.5	150	<5	<1	<2	<5	160	<5	<0.1	<2	<5
GW52_0.50	<50	<0.2	<0.2	<1	<0.5	<0.5	8870	7	<1	24	27	20400	52	0.1	11	61
GW61_3.00	<50	<0.2	<0.2	<1	<0.5	<0.5	6510	31	26	283	1470	<u>209000</u>	4780	<0.1	844	4850
GW62_0.50	<50	<0.2	<0.2	<1	<0.5	<0.5	2150	<5	<1	7	<5	3020	12	<0.1	4	17
GW65_0.05	290	<0.2	<0.2	<1	0.7	8.5	9910	15	<1	41	72	25300	131	0.2	43	252
GW65_0.50	<50	<0.2	<0.2	<1	<0.5	<0.5	12100	17	<1	28	10	23400	14	<0.1	16	27
GW70_0.50	<50	<0.2	<0.2	<1	<0.5	<0.5	240	<5	<1	<2	<5	500	6	<0.1	<2	<5
GW75_1.00	2760	1	1.5	2	28.1	319	5420	25	<1	14	89	21700	<u>617</u>	2.3	18	231
GW82_0.50	<50	<0.2	<0.2	<1	<0.5	<0.5	1920	<5	<1	6	16	4590	44	0.1	12	56
Statistics																
No. of Results	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
No. of Detects	4	1	1	1	2	3	12	5	1	10	8	12	10	5	9	9
Min. Conc.	<50	<0.2	<0.2	<1	<0.5	<0.5	150	<5	<1	<2	<5	160	<5	<0.1	<2	<5
Min. Detect	110	1	1.5	2	0.7	1	150	7	26	2	10	160	6	0.1	4	17
Max Conc.	2760	1	1.5	2	28.1	319	12100	31	26	283	1470	209000	4780	2.3	844	4850
Max Detect	2760	1	1.5	2	28.1	319	12100	31	26	283	1470	209000	4780	2.3	844	4850
Avg. Conc	296	0.18	0.22	0.63	2.6	28	4915	9.4	2.6	38	159	29909	480	0.27	88	469
Median Conc.	25	0.1	0.1	0.5	0.25	0.25	5175	2.5	0.5	10.5	20.5	21050	37	0.05	14	53.5
Std Dev	781	0.26	0.4	0.43	8	92	4019	10	7.4	79	416	57464	1365	0.64	239	1382

Location	TRHC10-C40	Benzene	Total BTEX	NAP (VOC Suite)	BAP	Total PAH	Al	As	Cd	Cr	Cu	Fe	Pb	Hg	Ni	Zn
No. of Exceedences	0	1	0	0	2	0	0	0	1	1	2	1	2	0	4	1

*Notes:**NL = No Limit**Bold – In excess of Ecosystems Screening NEPM 2013 Residential & Public Open Space**Underline – In excess of Health Screening NEPM 2013 Residential A**Italics – In excess of Health Screening NEPM 2013 Residential B*

8.5.2 Groundwater CoPC in excess of guidelines

AECOM has compared the groundwater results to the guidelines developed for the beneficial uses described in **Section 2.3**. The following contaminants of potential concern (CoPC) were reported to be in excess of these guidelines, while the relevance of these exceedances is discussed in **Section 8.6**.

- CoPC in excess of Maintenance of Ecosystem guidelines:
 - TRH C10-C40 – 5 samples
 - Anthracene – 1 sample
 - Fluorene – 2 samples
 - Phenanthrene – 1 sample
 - BAP – 2 samples
 - Total Metals (Al – 47 samples, As – 46 samples, Cd – 1 sample, Cr – 44 samples, Cu – 45 samples, Fe – 47 samples, Pb – 35 samples, Mn – 34 samples, Ni – 38 samples, Zn – 46 samples)
 - Dissolved Metals (Al – 42 samples, As – 28 samples, Cr – 8 samples, Cu – 4 samples, Fe – 44 samples, Mn – 34 samples, Ni – 26 samples, Zn – 15 samples)
 - NH₃ (as N) – 14 samples
 - NO₃ (as N) – 7 samples
 - PFOS – 7 samples
- CoPC in excess of Potable Water Supply guidelines:
 - Benzene – 3 samples
 - Ethylbenzene – 1 sample
 - Benz(a)anthracene – 1 sample
 - Benzo(a)pyrene – 2 samples
 - Chrysene – 1 sample
 - Dibenz(a,h)anthracene – 1 sample
 - Indeno(1,2,3-cd)pyrene – 1 sample
 - Total Metals (Al – 46 samples, As – 41 samples, Cd – 1 sample, Cr – 11 samples, Fe – 47 samples, Pb – 28 samples, Mn – 33 samples, Ni – 34 samples)
 - Dissolved Metals (Al – 9 samples, As – 13 samples, Fe – 44 samples, Mn – 33 samples, Ni – 26 samples)
 - 1,4-Dichlorobenzene – 1 sample
 - 1,1-Dichloroethane – 1 sample
 - NH₃ (as N) – 36 samples
 - NO₃ (as N) – 2 samples
 - Cl – 22 samples
 - F – 1 sample
 - Total Na – 20 samples
 - Dissolved Na – 7 samples
 - SO₄ – 14 samples
 - PFHxS & PFOS – 4 samples

- CoPC in excess of Agriculture, Parks and Gardens guidelines:
 - Total Metals (Al – 26 samples, As – 2 samples, Cd – 1 sample, Cr – 2 samples, Mn – 25 samples, Zn – 1 sample)
 - Dissolved Metals (Mn – 25 samples)
 - NH₃ (as N) – 14 samples
 - NO₃ (as N) – 5 samples
 - Nutrients (Cl – 35 samples, F – 5 samples, Total Na – 25 samples, Dissolved Na – 9 samples)
- CoPC in excess of Stock Watering guidelines:
 - Benzene – 3 samples
 - Benz(a)anthracene – 1 sample
 - Benzo(k)fluoranthene – 1 sample
 - BAP – 2 samples
 - Chrysene – 1 sample
 - Dibenz(a,h)anthracene – 1 sample
 - Indeno(1,2,3-cd)pyrene – 1 sample
 - Total Metals (Al – 26 samples, Cd – 1 sample, Pb – 5 samples, Mn – 10 samples)
 - Dissolved Metals (Mn – 9 samples)
 - 1,1-Dichloroethane – 1 sample
 - NH₃ (as N) – 29 samples
 - NO₃ (as N) – 1 sample
 - SO₄ – 6 samples
- CoPC in excess of Primary Contact Recreation guidelines:
 - TRHC10-C16 – 7 samples
 - TRHC16-C34 – 1 sample
 - Benzene – 3 samples
 - Benz(a)anthracene – 1 sample
 - Dibenz(a,h)anthracene – 1 sample
 - Indeno(1,2,3-cd)pyrene – 1 sample
 - Total Metals (Al – 45 samples, As – 2 samples, Fe – 47 samples, Pb – 5 samples, Mn – 10 samples)
 - Dissolved Metals (Al – 9 samples, Fe – 44 samples, Mn – 9 samples)
 - 1,1-Dichloroethane – 1 sample
 - NH₃ (as N) – 30 samples
 - Cl – 21 samples
 - Total Na – 20 samples
 - Dissolved Na – 7 samples
 - SO₄ – 7 samples

- CoPC in excess of Buildings and Structures guidelines:
 - pH – 1 sample
 - Cl – 1 sample
 - SO₄ – 6 samples

8.5.2.1 Groundwater – Per- and poly-fluoroalkyl substances (PFAS)

In addition to the PFAS exceedences reported above, the following observations have been made:

- Four (4) samples reported a combined PFOS and PFHxS concentration in excess of the current Australian drinking water guidelines.
- Seven (7) samples reported PFOS concentrations in excess of the incoming ANZECC 2000 Maintenance of Ecosystems Freshwater 99% protection level for freshwater aquatic ecosystems.
- No PFOA concentrations were found to exceed the current drinking water guidelines (Department of Health [April 2017], *Health Based Guidance Values for PFAS for use in site investigations in Australia*), or the incoming ANZECC 2000 Maintenance of Ecosystems Freshwater 99% protection level for freshwater aquatic ecosystems.
- The PFAS signature in five samples (GW40A/C, GW41, GW51, GW67, GW73) is dominated by sulphonates (primarily PFHxS and PFOS, plus PFBS in sample GW40A/C). Note that this pattern is typically seen on Aqueous Film Forming Foam (AFFF) sites in association with older formulations such as 3M Lightwater.
- The PFAS signature in sample GW81 is dominated by acids, indicating a potential different source type.
- The PFAS signature in sample GW61 contains equal proportions of sulphonates (PFHxS and PFBS) and acids (PFHxA). Whilst the data is inconclusive, the PFAS signature in groundwater at this location may be associated with a mixed source.

8.5.2.2 Groundwater – CoPC detected in groundwater

In addition to the CoPC reported in excess of guidelines, we have also listed all CoPC detected in groundwater as part of this assessment, as they are considered to be representative of CoPC that would likely be detected in future assessments or environmental audits at the precinct.

Table 13 provides a summary of the CoPC that have been detected in soil and groundwater. The CoPCs detected in soil have been compared to the CoPC detected in groundwater to establish if there is a potential for leaching from soil to groundwater, which may in turn indicate that the CoPC in groundwater are associated with a point source rather than a regional issue.

As seen in the table, no locations were identified as locations where soil leaching has potentially occurred. Although, it should be noted that, due to the limited soil analytical scope, the majority of groundwater data cannot be compared to soil data from corresponding groundwater well locations, which thereby limits the level of interpretation. Nevertheless, and based on the data available, no locations have been removed from the final phase of the data assessment process as they are all potentially representative of regional conditions.

Table 13 Detectable CoPC in shallow groundwater

Location	CoPC detected in groundwater	CoPC detected in soil
DAMW5_02	TRH(C10-C40), As, Cd, Cr, Cu, Pb, Mn, Ni, Zn, NH ₃ (N), NH ₄ (N), P, Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
F3	TRH(C10-C40), Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH ₃ (N), NH ₄ (N), Cl, Ca, F, Mg, K, Na, S,	No soil sample analysed.

Location	CoPC detected in groundwater	CoPC detected in soil
GMW02	TRH(C10-C40), Al, As, Cr, Cu, Fe, Pb, Ni, Zn, NH3(N), NO3(N), NH4(N), P, Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
GMW03	TRH(C10-C40), As, Cd, Cr, Cu, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NO2(N), NH4(N), P, Cl, Ca, F, Mg, K, Na, S,	No soil sample analysed.
GMW83	As, Cr, Cu, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NO2(N), NH4(N), Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
GW39	Al, As, Cr, Cu, Fe, Pb, Mn, Ni, Zn, cis-1,2-Dichloroethene, NH3(N), NO3(N), NH4(N), P, Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
GW40A/C	Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NO2(N), NH4(N), Cl, Ca, F, Mg, K, Na, S, Sum PFHxS&PFOS	<p>TRHC10-C40, Total PAH, Al, Cr, Cr, Fe, Pb, Ni, Zn</p> <p>TRH analysis includes naturally occurring hydrocarbons associated with organic degradation and anthropogenic sources such as land reclamation using uncontrolled backfill or leaks from vehicles.</p> <p>Metals may be present in association with natural geological parent material or anthropogenic sources such as land reclamation using uncontrolled backfill or leaks from vehicles.</p> <p>Both metals and TRH are potentially associated with a soil contamination source, or naturally occurring and as such, this data point will not be removed from the data set.</p>
GW41	As, Cr, Cu, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NH4(N), Cl, Ca, F, Mg, K, Na, S, PFOS, Sum of PFAS, Sum PFHxS&PFOS	No soil sample analysed.
GW42AC	As, Cr, Cu, Mn, Ni, Zn, NH3(N), NO2(N), NH4(N), P, Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
GW43	TRH(C10-C40), Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH3(N), NH4(N), Cl, Ca, F, Mg, K, Na, S	<p>Al, Cr, Fe</p> <p>These metals may be present in association with natural geological parent material or anthropogenic sources such as land reclamation using uncontrolled backfill or leaks from vehicles.</p> <p>Metals are potentially associated with a soil contamination source, or naturally occurring and as such, this data point will not be removed from the data set.</p>

Location	CoPC detected in groundwater	CoPC detected in soil
GW45	TRH(C10-C40), Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH3(N), NH4(N), P, Cl, F, Mg, K, Na, S	No soil sample analysed.
GW46	TRH(C6-C10),TRH(C10-C40), Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH3(N), NH4(N), Cl, Ca, F, Mg, K, Na, S	Al, Cr, Cu, Fe, Pb, Hg, Ni, Zn These metals may be present in association with natural geological parent material or anthropogenic sources such as land reclamation using uncontrolled backfill or leaks from vehicles. Metals are potentially associated with a soil contamination source, or naturally occurring and as such, this data point will not be removed from the data set.
GW47	Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, 1,1-Dichloroethene, NH3(N), NO3(N), NH4(N), P, Cl, F, Mg, K, Na, S	Al, Fe These metals may be present in association with natural geological parent material or anthropogenic sources such as land reclamation using uncontrolled backfill or leaks from vehicles.
GW48	As, Cd, Cr, Cu, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NO2(N), NH4(N), Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
GW51	As, Cr, Cu, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NO2(N), NH4(N), P, Cl, Ca, F, Mg, K, Na, S, Sum of PFAS, Sum of PFHxS&PFOS, PFHxS	No soil sample analysed.
GW52	TRH(C6-C10), benzene, Al, As, Cr, Cu, Fe, Pb, Ni, Zn, 1,1-Dichloroethene, cis-1,2-Dichloroethene, NH3(N), NO3(N), NH4(N), Cl, Ca, F, Mg, K, Na, S	Al, As, Cr, Cu, Fe, Pb, Hg, Ni, Zn These metals may be present in association with natural geological parent material or anthropogenic sources such as land reclamation using uncontrolled backfill or leaks from vehicles. Metals are potentially associated with a soil contamination source, or naturally occurring and as such, this data point will not be removed from the data set.
GW53	As, Cd, Cr, Cu, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NH4(N), Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
GW54	TRH(C10-C40), Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH3(N), NO2(N), NH4(N), Cl, Ca, F, Mg, K, Na, S, Carbon Disulfide	No soil sample analysed.
GW56	TRH(C10-C40), Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NO2(N), NH4(N), P, Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.

Location	CoPC detected in groundwater	CoPC detected in soil
GW57	Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH ₃ (N), NH ₄ (N), Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
GW61	TRH(C10-C40), Isopropylbenzene, n-propylbenzene, sec-butylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH ₃ (N), NH ₄ (N), Cl, Ca, F, Mg, K, Na, S, PFBS, PFHxA, Sum of PFAS, Sum of PFHxS&PFOS, PFHxS	Al, As, Cd, Cr, Cu, Fe, Pb, Ni, Zn These metals may be present in association with natural geological parent material or anthropogenic sources such as land reclamation using uncontrolled backfill or leaks from vehicles. Metals are potentially associated with a soil contamination source, or naturally occurring and as such, this data point will not be removed from the data set.
GW62	As, Cd, Cr, Cu, Pb, Mn, Ni, Zn, NH ₃ (N), NO ₃ (N), NO ₂ (N), NH ₄ (N), Cl, Ca, F, Mg, K, Na, S	Al, Cr, Fe, Pb, Ni, Zn These metals may be present in association with natural geological parent material or anthropogenic sources such as land reclamation using uncontrolled backfill or leaks from vehicles. Metals are potentially associated with a soil contamination source, or naturally occurring and as such, this data point will not be removed from the data set.
GW65	TRH(C6-C10), TRH(C10-C40), benzene, toluene, ethylbenzene, naphthalene, acenaphthene, fluorene, phenanthrene, Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH ₃ (N), NH ₄ (N), Cl, Ca, F, Mg, K, Na, S	BaP, Total PAH, Al, As, Cr, Cu, Fe, Pb, Hg, Ni, Zn Metals may be present in association with natural geological parent material or anthropogenic sources such as land reclamation using uncontrolled backfill or leaks from vehicles. PAH compounds may be associated with the previous landfill/quarry at this location, which covered a large area of the precinct and may be regionally significant (See Plate 4). As such, this data point will not be removed from the data set.
GW67	TRH(C10-C40), Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, cis-1,2-Dichloroethene, NH ₃ (N), NH ₄ (N), Cl, F, Mg, K, Na, S, PFOS, Sum of PFAS, Sum of PFHxS&PFOS,	No soil sample analysed.
GW69	TRH(C10-C40), Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH ₃ (N), NO ₃ (N), NO ₂ (N), NH ₄ (N), Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.

Location	CoPC detected in groundwater	CoPC detected in soil
GW70	Al, As, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NH4(N), Cl, Ca, F, Mg, K, Na, S	Al, Fe, Pb These metals may be present in association with natural geological parent material or anthropogenic sources such as land reclamation using uncontrolled backfill or leaks from vehicles. Metals are potentially associated with a soil contamination source, or naturally occurring and as such, this data point will not be removed from the data set.
GW72	TRH(C10-C40), Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NH4(N), Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
GW73	As, Cd, Cr, Cu, Pb, Mn, Ni, Zn, NH3(N), NH4(N), Cl, Ca, F, Mg, K, Na, S, PFOS, Sum of PFHxS&PFOS, PFHxS	No soil sample analysed.
GW74	As, Cd, Cr, Cu, Pb, Mn, Ni, Zn, NH3(N), NH4(N), Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
GW75	Phenanthrene, Fluoranthene, Benzo(b&j)fluoranthene, Benzo(a)pyrene, Pyrene, Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NO2(N), NH4(N), Cl, Ca, F, Mg, K, Na, S	NAP (VOC), BAP, Total PAH, Al, As, Cr, Cu, Fe, Pb, Hg, Ni, Zn Metals may be present in association with natural geological parent material or anthropogenic sources such as land reclamation using uncontrolled backfill or leaks from vehicles. PAH compounds may be associated with the previous landfill/quarry at this location (See Plate 4), which covered a large area of the precinct and may be regionally significant. As such, this data point will not be removed from the data set.
GW76	TRH(C10-C40), As, Cd, Cr, Cu, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NO2(N), NH4(N), P, Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
GW77	TRH(C10-C40), As, Cd, Cr, Cu, Pb, Mn, Ni, Zn, NH3(N), NH4(N), Cl, Ca, F, Mg, K, Na, S, 2-Propanone (Acetone),	No soil sample analysed.
GW80	Al, As, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH3(N), NO3(N), NH4(N), P, Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
GW81	TRH(C10-C40), Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH3(N), NH4(N), Cl, Ca, F, Mg, K, Na, S, PFOA, PFOS, PFPeA, PFHpA, PFHxA, Sum of PFAS, Sum of PFHxS&PFOS, PFPeS, PFHxS	No soil sample analysed.

Location	CoPC detected in groundwater	CoPC detected in soil
GW82	Al, As, Cr, Cu, Fe, Pb, Mn, Ni, Zn, NH3(N), NH4(N), Cl, Ca, F, Mg, K, Na, S	Al, Cr, Cu, Fe, Pb, Hg, Ni, Zn These metals may be present in association with natural geological parent material or anthropogenic sources such as land reclamation using uncontrolled backfill or leaks from vehicles. Metals are potentially associated with a soil contamination source, or naturally occurring and as such, this data point will not be removed from the data set.
MW1333_02	TRH(C10-C40), Al, As, Cr, Cu, Fe, Pb, Ni, Zn, NH3(N), NO3(N), NH4(N), P, Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
MW1371_02	As, Cr, Cu, Pb, Mn, Ni, Zn, NH3(N), NH4(N), P, Cl, Ca, F, Mg, K, Na, S	No soil sample analysed.
MW9AI	TRH(C10-C40), As, Cr, Cu, Pb, Mn, Ni, Zn, 1,1-Dichloroethene, NH3(N), NO3(N), NH4(N), P, Cl, Ca, Mg, K, Na, S	No soil sample analysed.

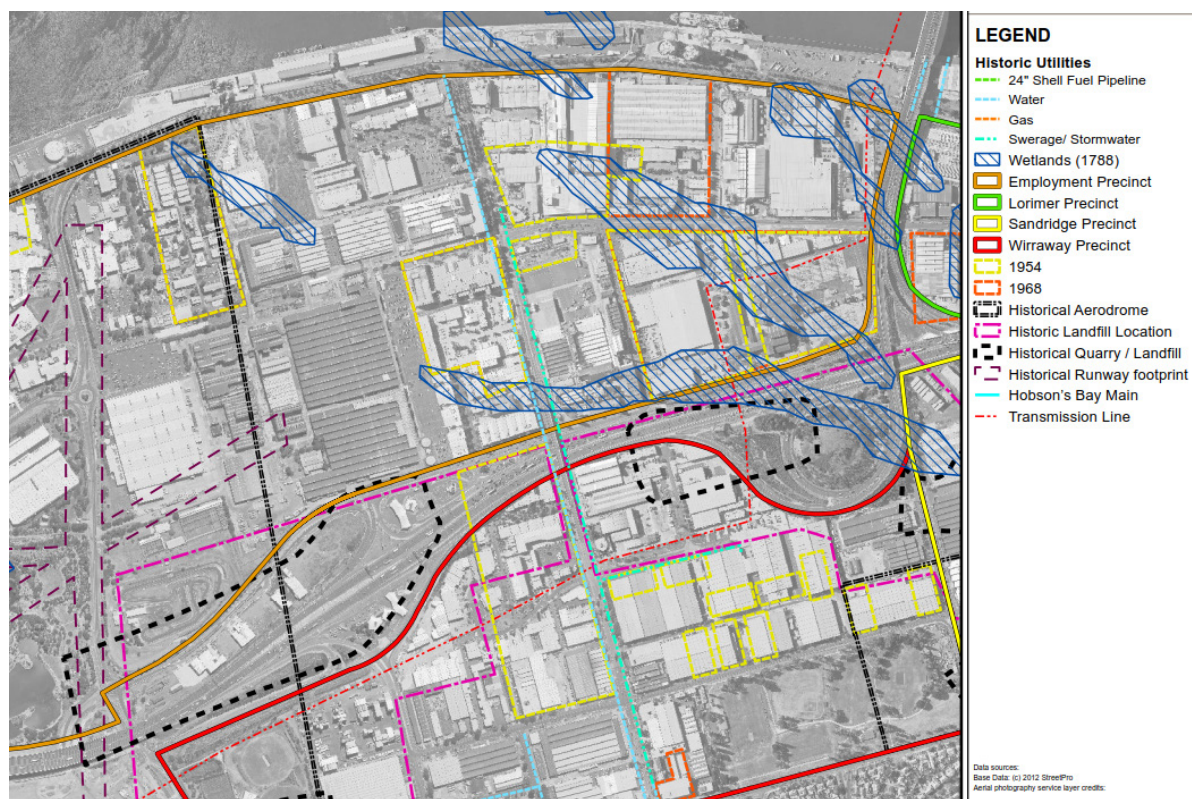


Plate 4 – Former landfill/quarry areas.

8.6 Beneficial Uses of Shallow Groundwater

The most sensitive groundwater segment that may be applicable at the precinct (based on TDS concentrations reported in May 2017) is Segment A1 (<500mg/L).

Segment A1 requires the protection of Potable Water Supply – Desirable, which aligns with the most conservative guidelines. AECOM has therefore summarised descriptive statistics of CoPC detected at concentrations in excess of the most conservative guideline (Potable Water Supply – Desirable). These are considered to be the CoPC at the precinct, which are most likely to trigger further investigation during future assessments/audits. It should be noted that the area is serviced by a reticulated water supply, which may limit the potential for this beneficial use to be realised.

Table 15 provides a summary of groundwater CoPC that reported concentrations in excess of Potable Water Supply – Desirable, while Quantile-Quantile (QQ) Plots have been developed as an additional data visualisation tool for those CoPC with a minimum of 8 data points, as seen in **Appendix L**.

We acknowledge that there are many ways to present the data and conduct statistical analysis. For this assessment, we are of the opinion that it would be reasonable to assume that CoPC with <8 detections would indicate the relevant CoPC is associated with specific sources (hence, conducting statistical analysis on >8 data points). Should the data in this report be used (in part or in whole) within other assessments undertaken across the precinct, we recommend that the appointed Assessor and/or Auditor use a statistical approach which is justifiable and specific to the needs of the investigation at the time.

Further discussion regarding beneficial uses is provided in the following sections.

8.6.1 Maintenance of Ecosystems

As described in **Section 8.5.2**, a number of CoPC were reported at concentrations that exceeded the investigation levels (ILs) for the protection of Maintenance of Ecosystems, including: TRH, PAH, Metals and PFAS. However, some of these CoPC reported <8 detections, (i.e. PAH, some metals and PFAS), and as such, they are not considered to be statistically significant on a regional scale for the purposes of this assessment.

Based on the groundwater results and statistical assessment, we have made the following preliminary conclusions with respect to this beneficial use:

- NH₃ and NO₃ contamination is likely to be associated with diffuse sources of groundwater pollution from urban sources such as leaking drainage and sewerage infrastructure.
- Metals (Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni and Zn) are considered to be regionally elevated, however, further GME's should be undertaken at the precinct to determine if they are in association with anthropogenic ambient conditions (non-point source) or natural background conditions.
- TRH C10-C40 contamination is likely to be associated with diffuse sources of groundwater pollution or multiple point sources.

The beneficial use, maintenance of ecosystems, is assumed to be precluded at the point of discharge (the Yarra River) by NH₃, NO₃ and TRH C10-C40. However, further assessment of metals, PFAS and VOCs in groundwater is required to rule these CoPC out as pollutants associated with diffuse sources.

8.6.2 Agriculture, Parks and Gardens

As described in **Section 8.5.2**, a number of CoPC were reported at concentrations that exceeded the ILs for the protection of Agriculture, Parks and Gardens, including: Metals, NH₃, NO₃, Cl, F and Na.

Based on the groundwater results and statistical assessment, we have made the following preliminary conclusions with respect to this beneficial use:

- NH₃ and NO₃ contamination is likely to be associated with diffuse sources of groundwater pollution from urban sources such as leaking drainage and sewerage infrastructure.
- Metals (Al, As, Cd, Cr, Mn and Zn), Cl, F and Na are considered to be regionally elevated, however, further GME's should be undertaken at the precinct to determine if they are in

association with anthropogenic ambient conditions (non-point source) or natural background conditions.

The beneficial use, agriculture, parks and gardens, is assumed to be precluded at the precinct by NH₃ and NO₃. However, further assessment of metals, Cl, F and Na in groundwater is required to rule these CoPC out as pollutants associated with diffuse sources.

8.6.3 Stock Watering

As described in **Section 8.5.2**, a number of CoPC were reported at concentrations that exceeded the ILs for the protection of Stock Watering, including: benzene, PAH, Metals, 1,1-Dichloroethane, NH₃, NO₃ and SO₄. However, benzene, PAH and 1,1-Dichloroethane reported <8 detections, and as such, they are not considered to be statistically significant on a regional scale for the purposes of this assessment.

Based on the groundwater results and statistical assessment, we have made the following preliminary conclusions with respect to this beneficial use:

- NH₃ and NO₃ contamination is likely to be associated with diffuse sources of groundwater pollution from urban sources such as leaking drainage and sewerage infrastructure.
- Metals (Al, Cd, Pb, Mn) and SO₄ are considered to be regionally elevated, however, further GME's should be undertaken at the precinct to determine if they are in association with anthropogenic ambient conditions (non-point source) or natural background conditions.

The beneficial use, stock watering, is assumed to be precluded at the precinct by NH₃ and NO₃. However, further assessment of metals and SO₄ in groundwater is required to rule these CoPC out as pollutants associated with diffuse sources.

8.6.4 Industrial Water Use

We have not provided specific industrial water use screening levels due to the various types of industry that may extract groundwater and the varying requirements of water quality. We note that the TDS concentrations in shallow groundwater may limit particular industrial water uses, however, TDS is considered to be naturally occurring and therefore not pollution.

The concentrations of ammonia measured in shallow groundwater could preclude industrial water use.

8.6.5 Primary Contact Recreation

As described in **Section 8.5.2**, a number of CoPC were reported at concentrations that exceeded the ILs for the protection of Primary Contact Recreation, including: TRH C10-C16, TRH C16-C34, benzene, PAH, 1,1-Dichloroethane, Metals (Al, As, Fe, Pb and Mn), NH₃, Cl, Na and SO₄. However, benzene reported <8 detections, and as such, it is not considered to be statistically significant on a regional scale for the purposes of this assessment.

Based on the groundwater results and statistical assessment, we have made the following preliminary conclusions with respect to this beneficial use:

- NH₃ contamination is likely to be associated with diffuse sources of groundwater pollution from urban sources such as leaking drainage and sewerage infrastructure.
- Metals (Al, As, Fe, Pb and Mn), Cl, Na and SO₄ are considered to be regionally elevated, however, further GME's should be undertaken at the precinct to determine if they are in association with anthropogenic ambient conditions (non-point source) or natural background conditions.
- TRH C10-C16 and TRH_C16-C34 contamination is likely to be associated with diffuse sources of groundwater pollution or multiple point sources.

The beneficial use, primary contact recreation, is assumed to be precluded at the precinct by NH₃ and TRH C10-C40. However, further assessment of metals, Cl, Na and SO₄ in groundwater is required to rule these CoPC out as pollutants associated with diffuse sources.

8.6.6 Buildings and Structures

As detailed in Section 8.5.2, Cl concentrations in one groundwater sample and SO₄ concentrations in 4 groundwater samples indicate that groundwater could be aggressive to concrete piles in some areas at the precinct. However, the chloride and sulfate concentrations are considered to be naturally occurring and therefore do not constitute pollution.

Based on the limited data available, the beneficial use, buildings and structures, is considered to be a protected beneficial use.

8.6.7 Preliminary Summary of Regional Groundwater Contamination

Based on the limited data available, *regional* shallow groundwater at the precinct appears to be polluted by ammonia, nitrate and TRH C10-C40. Each of these CoPC are likely to be present due to a diffuse source, or co-source that is regionally elevated. We recommend that this be confirmed during the next GME (scheduled for July 2017) to confirm this preliminary conclusion.

8.7 Part 1 Results versus Part 2 Results

The same assessment framework was adopted during Part 1 works. The following table shows the CoPC that were identified as potentially triggering further consideration during future redevelopment for both Part 1 and Part 2.

It also highlights some select CoPC that were detected during both phases of works. Note that some of these CoPC are not considered regionally significant in terms of this assessment framework as there were <8 detections.

Table 14 Part 1 Results versus Part 2 Results

COPC	Part 1 Results	Part 2 Results
CoPC that could potentially trigger further consideration in relation to future redevelopment.	<ul style="list-style-type: none"> • Ammonia as N • Ammonia as N • Chloride • Nitrate as N • Sulfate as SO₄ • TDS • Arsenic • Iron • Manganese • Nickel • TRHC10-C40 	<p>Identified in both Part 1 and Part 2:</p> <ul style="list-style-type: none"> • Ammonia as N • Chloride • Nitrate as N • Sulfate as SO₄ • TDS • Arsenic • Iron • Manganese • Nickel • TRHC10-C40 <p>Identified in Part 2 but not Part 1:</p> <ul style="list-style-type: none"> • Aluminium • Cadmium • Chromium • Lead • Fluoride • Sodium • PFAS
Key CoPC Detected	<ul style="list-style-type: none"> • Benzene (4/38) • Chloroform (1/14) • 1,4-dichlorobenzene (2/14) • Chlorobenzene (2/14) 	<p>Detected in both Part 1 and Part 2:</p> <ul style="list-style-type: none"> • Benzene (3/47) • Naphthalene (3/53) • Isopropylbenzene (1/27)

COPC	Part 1 Results	Part 2 Results
	<ul style="list-style-type: none"> • 1,2,4-trimethylbenzene (2/14) • 1,3,5-trimethylbenzene (1/14) • Isopropylbenzene (3/14) • n-propylbenzene (2/14) • Naphthalene (2/38) • Acetone (1/14) 	<ul style="list-style-type: none"> • n-propylbenzene (1/27) • 1,2,4-trimethylbenzene (1/27) • 1,3,5-trimethylbenzene (1/27) <p>Detected in Part 2 but not Part 1:</p> <ul style="list-style-type: none"> • Ethylbenzene (1/47) • Benzo(a)pyrene (2/47) • 1,4-Dichlorobenzene (1/27) • 1,1-Dichloroethane (5/27) • cis-1,2-Dichloroethene (5/27) • 2-Propanone (Acetone) (1/23) • sec-butylbenzene (1/27)

Table 15 Summary of CoPC in groundwater in excess of Potable Water Supply guidelines (minimum of 8 detectable concentrations)

Statistics	TDS	TRH C10-C40	Total Al	Total As	Total Cd	Total Cr	Total Fe	Total Pb	Total Mn	Total Ni	NH3 (as N)	NO3 (as N)	Cl	F	Na	SO4	Sum of PFHxS and PFOS
Units	mg/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	µg/L
No. of Results	47	47	47	47	47	47	47	47	41	47	47	47	47	47	41	47	10
No. of Detects	47	21	47	47	23	47	47	46	41	47	47	28	47	45	41	42	7
Min Conc.	124	<100	0.04	0.002	<0.0001	0.004	1.06	<0.001	0.013	0.006	0.06	<0.01	6	<0.1	4	<1	<0.01
Min Detect	124	100	0.04	0.002	0.0001	0.004	1.06	0.001	0.013	0.006	0.06	0.01	6	0.1	4	5	0.02
Max Conc.	12800	2070	38.5	0.125	0.0103	0.13	63.4	0.595	1.13	0.154	80.3	102	6510	1.8	3840	1840	0.62
Max Detect	12800	2070	38.5	0.125	0.0103	0.13	63.4	0.595	1.13	0.154	80.3	102	6510	1.8	3840	1840	0.62
Avg Conc.	2437	228	9	0.03	0.00045	0.031	19	0.047	0.33	0.053	8.4	3.9	826	0.53	501	331	0.1
Median Conc.	1200	50	6.42	0.022	0.00005	0.02	17.2	0.012	0.242	0.041	2.21	0.01	202	0.5	159	180	0.045
Std Dev	2727	371	8.2	0.027	0.0015	0.027	14	0.096	0.27	0.038	18	16	1466	0.38	839	431	0.19

Notes:

Total Metals (rather than dissolved metals) have been presented in this table (as a conservative approach)

Split duplicate and triplicate samples are included in this table

9.0 Conclusions

The assessment focused primarily on characterising the condition of the shallow groundwater aquifer, to determine key factors that may be influencing its quality at a regional scale, and provide a summary of regional groundwater quality for future reference. The regional groundwater conditions described in this report may be considered when informing future development decisions at the precinct.

The precinct is one of five precincts within Fishermans Bend. AECOM completed the initial regional baseline groundwater assessment in the other four precincts (Wirraway, Sandridge, Lorimer and Montague) in 2015-2016. Note that the 2015-2016 assessment is referred to throughout this report as Part 1, while the 2017 assessment in the Employment Precinct is referred to as Part 2.

The primary objectives of the assessment were to:

- Summarise the results of the groundwater monitoring in the Employment Precinct.
- Provide a Preliminary Conceptual Site Model.
- Determine the baseline shallow groundwater quality across the precinct.
- Provide possible regional background concentrations of chemicals of potential concern (CoPC) based on the data obtained.
- Describe any potential point sources of contamination identified.
- Confirm the protected and precluded beneficial uses of shallow groundwater at the precinct.
- Provide evidence for the identification of a potential regional Groundwater Quality Restricted Use Zone (Regional GQRUZ).

Based on the above objectives and scope of work, the following conclusions can be made:

Baseline shallow groundwater quality beneath the Employment Precinct

- Of the 27 new groundwater well locations:
 - Four (4) encountered groundwater within fill material.
 - Twenty-three (23) encountered groundwater within the Port Melbourne Sands.
 - These observations are consistent with the regional geological maps of the area.
- We have not been provided with borelogs for the 14 existing groundwater wells that were sampled during this assessment, however, we have obtained survey data for 12 of these wells, and measured the total well depth of all 14 existing groundwater wells. The existing groundwater wells have been installed to depths between 1 and 7.45 metres below top of casing (mBTOC).
- Field observations and bore logs indicated that fill and the Port Melbourne Sands are interconnected.
- SWL's were reported to range between 1.213 and 3.417 metres below top of casing (mBTOC). This variation across the site is expected due to the presence of former landfills/quarries, extensive sewer networks, former wetland areas and close proximity to the Yarra River.
- In a regional context, the shallow groundwater flow-paths within fill material and the Port Melbourne Sands are likely to flow towards the north based on the results of the gauging program.
- There may be a groundwater high/divide in the southern portion of the Employment Precinct, with groundwater north of the high flowing predominantly towards the Yarra River, and groundwater to the south flowing towards Hobsons Bay. This would not be surprising given the two different water bodies will both influence groundwater. However, this high/divide cannot be confirmed until further groundwater gauging events are conducted across the Fishermans Bend area. A GME across the whole of Fishermans Bend planned for July 2017 will assist with this.

- 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. Various precinct activities and surface coverage can also affect the extent of recharge of the shallow aquifer.
- Shallow underground infrastructure can 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). However, given the shallow depth of the upper unconfined aquifer, it is unlikely that deep underground infrastructure >10 metres below ground level (mBGL) has a significant impact on flow direction.
- In general, the major cation and anion compositions within shallow groundwater beneath the precinct was found to be mixed and variable, indicating that there are a number of shallow groundwater signatures (i.e. types).
- The *State Environment Protection Policy (Groundwaters of Victoria) 1997* (SEPP GoV) defines beneficial uses of groundwater on the basis of the classification of a groundwater segment which is based on background salinity, measured as total dissolved solids (TDS). As such, based on the laboratory reported TDS values:
 - 6 groundwater bores corresponds with Segment A1 (i.e. TDS 0 – 500mg/L).
 - 9 groundwater bores correspond with Segment A2 (i.e. TDS 501 – 1,000mg/L).
 - 18 groundwater bores correspond with Segment B (i.e. TDS 1,001 – 3,500mg/L).
 - 6 groundwater bores correspond with Segment C (i.e. TDS 3,501 – 13,000mg/L).
 - No groundwater bores correspond with Segment D (i.e. TDS >13,000mg/L).

Preliminary Conceptual Site Model (PCSM)

Based on the site setting, topography and findings of this baseline groundwater assessment, groundwater is considered likely to flow in a northerly direction. Groundwater is therefore likely to discharge to the Yarra River and place the following potential surface water receptors at risk:

- Aquatic ecosystems and groundwater dependent ecosystems (GDE's) in the Yarra River.
- Users of groundwater for potable supply.
- Terrestrial ecology where groundwater is used for irrigation or stock watering purposes.
- Recreational users in the Yarra River.

In addition to the above surface water receptors, as groundwater is relatively shallow across the study area (i.e. between 1 and 3.2mBGL), there is potential for groundwater to come into contact with building foundations, basement structures and subsurface utilities. Vapours arising from groundwater contaminants may migrate through the subsurface and into buildings, which could result in potential risk to occupants of those buildings.

Regional concentrations of chemicals of potential concern (CoPC)

The CoPC detected at concentrations in excess of the most conservative guideline (Drinking Water) were statistically assessed, as these are considered to be the CoPC at the precinct which are most likely to trigger further investigation during future assessments/environmental audits. In doing so, data points associated with potential point-sources of contamination have been removed as there is insufficient data (evidence) to suggest these points are regionally significant. This enables the remainder of the data to be used to determine possible regional conditions.

Based on the data set that is considered to be regionally significant, the following CoPC were reported in concentrations that exceed Potable Water Supply (Drinking Water) criteria. They may therefore trigger further consideration in relation to future redevelopment of the precinct and may be considered as potentially regionally elevated.

- Identified in both the Part 1 Assessment (i.e. Wirraway, Sandridge, Lorimer and Montague Precincts) and the Part 2 Assessment (i.e. Employment Precinct):
 - Ammonia as N – Likely from a diffuse source or co-source that is regionally elevated.
 - Nitrate as N – Likely from a diffuse source or co-source that is regionally elevated.
 - Chloride, Sulfate as SO₄, TDS, Arsenic, Manganese, Nickel and Iron – Considered regionally elevated and further assessment is required to rule these CoPC out as pollutants associated with diffuse sources.
 - TRHC10-C40 – Likely present from a diffuse source or a number of point sources.
- Identified in Part 2 but not Part 1:
 - Sum of PFHxS/PFOS – Likely present from a number of different types of point sources (e.g. areas of former firefighting activities [within firefighting foams], landfilled areas and various manufacturing and industrial activities).
 - Total Chromium, Lead, Cadmium, Fluoride, Sodium and Aluminium – Considered regionally elevated and further assessment is required to rule these CoPC out as pollutants associated with diffuse sources.
- Select volatile CoPC detected during Part 1 and Part 2 are as follows:

Part 1 Results	Part 2 Results
<ul style="list-style-type: none"> • Benzene (4/38) • Chloroform (1/14) • 1,4-dichlorobenzene (2/14) • Chlorobenzene (2/14) • 1,2,4-trimethylbenzene (2/14) • 1,3,5-trimethylbenzene (1/14) • Isopropylbenzene (3/14) • n-propylbenzene (2/14) • Naphthalene (2/38) • Acetone (1/14) 	<p>Detected in both Part 1 and Part 2:</p> <ul style="list-style-type: none"> • Benzene (3/47) • Naphthalene (3/53) • Isopropylbenzene (1/27) • n-propylbenzene (1/27) • 1,2,4-trimethylbenzene (1/27) • 1,3,5-trimethylbenzene (1/27) <p>Detected in Part 2 but not Part 1:</p> <ul style="list-style-type: none"> • Ethylbenzene (1/47) • Benzo(a)pyrene (2/47) • 1,4-Dichlorobenzene (1/27) • 1,1-Dichloroethane (5/27) • cis-1,2-Dichloroethene (5/27) • 2-Propanone (Acetone) (1/23) • sec-butylbenzene (1/27)

Note: Benzene (4/38) = (4 detections of benzene out of 38 samples analysed for benzene)

Potential Point Sources of Contamination

The CoPCs detected in soil were compared to the CoPC detected in groundwater to establish if there is a potential for leaching from soil to groundwater at individual locations, which may in turn indicate that the CoPC in groundwater are associated with a point source rather than a regional issue.

There was insufficient evidence of a relationship between concentrations of CoPC in soil and groundwater to conclude that there are locations at the precinct where soil leaching has occurred.

Protected and precluded beneficial uses of shallow groundwater

Based on the TDS concentrations, the most sensitive segment of groundwater at the site that is likely to require protection in future assessments/environmental audits is Segment A1 (as defined by the SEPP GoV which requires the protection of Potable Water Supply – Desirable 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.

Evidence for a Groundwater Quality Restricted Use Zone (GQRUZ)

The information in this report provides EPA with evidence to consider when evaluating the requirement for a regional GQRUZ, including:

- Groundwater flow contours to inform physical dimensions of a potential GQRUZ.
- Comparison of reported concentrations of CoPC in groundwater to screening criteria relevant to each of the protected beneficial uses and identification of individual exceedences.
- Identification of potentially regionally elevated CoPC that may drive future environmental assessments/audits/CUTEF determinations.
- Identification of localised impacts that, while they are not necessarily regionally elevated, may warrant further investigation, either on a regional or site specific basis.

10.0 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.

11.0 References

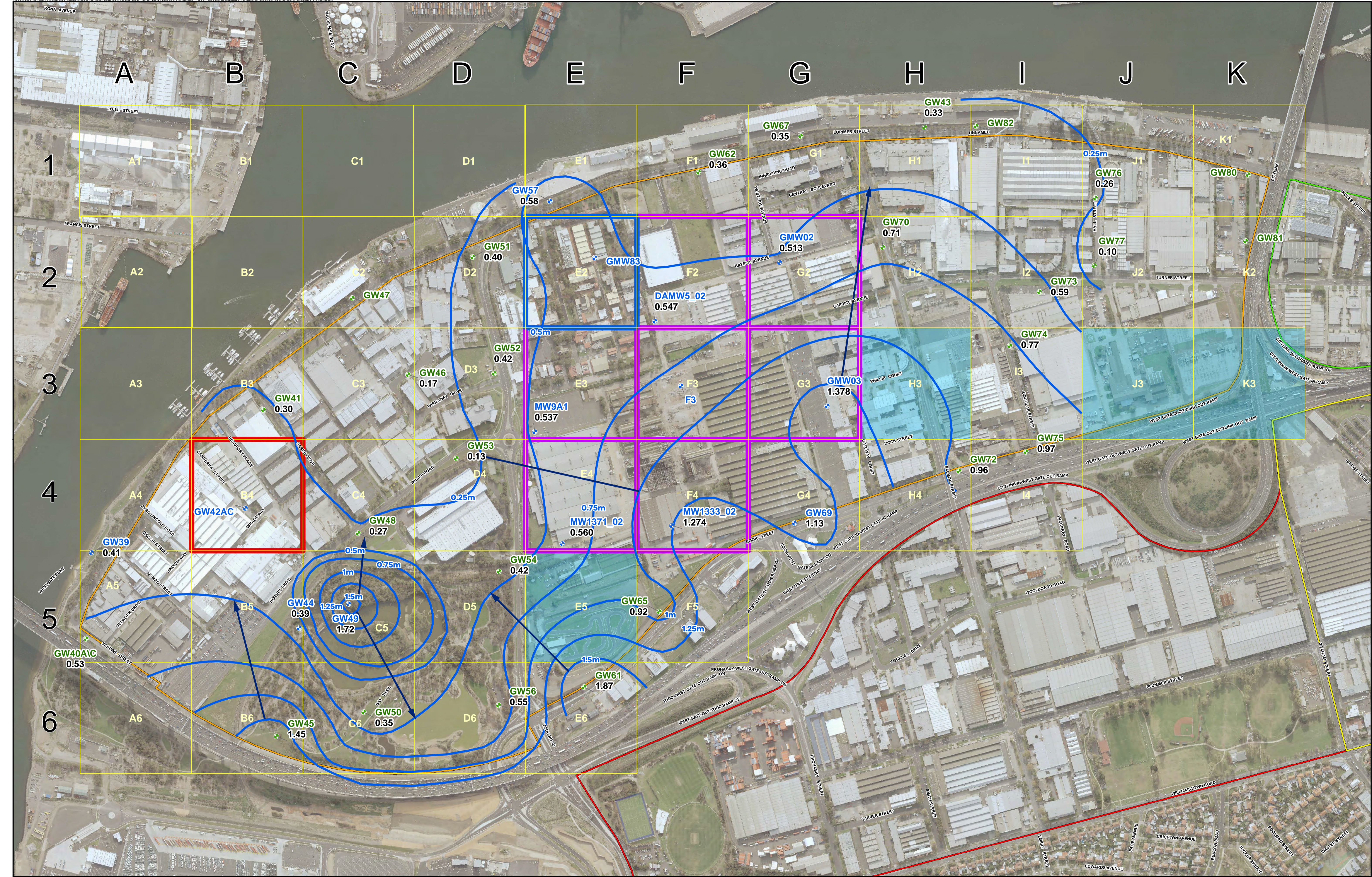
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- Victorian Government (December 1997) *State Environment Protection Policy - Groundwaters of Victoria*
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- Victorian Government (August 1997) *State Environment Protection Policy – Schedule F6 Waters of Port Phillip Bay (as varied in 2003)*

Figures

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<p>PROJECT ID: 60527182 CREATED BY: DUB LAST MODIFIED: 08/08/2017</p> <p>AECOM www.aecom.com</p> <p>DATUM: GDA 1994 PROJECTION: MGA ZONE 55 0 50 100 200 metres (when printed at A1) 1:3,700</p>	<p>LEGEND</p> <ul style="list-style-type: none"> Existing Well New Well 250m Grid Boeing land DSTO land GMH land Grid without Bore location Employment Lorimer Precinct Montague Precinct Sandridge Precinct Wirraway Precinct 	<p>GROUNDWATER BORE LOCATIONS</p> <p>EPA Regional Groundwater Assessment Fisherman's Bend, Melbourne, VIC</p> <p>Figure F1</p>
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<p>PROJECT ID: 60527182 CREATED BY: DIB LAST MODIFIED: 08/08/2017 www.aecom.com</p> <p>DATUM: GDA 1994 PROJECTION: MGA ZONE 55 0 50 100 200 metres (when printed at A1)</p>	<p>LEGEND</p> <ul style="list-style-type: none"> + Existing Well + New Well → Inferred Flow Direction — Inferred Groundwater Contours (0.25m interval) 250m Grid Boeing land DSTO land GMH land Grid without Bore location Employment Lorimer Precinct Montague Precinct Sandridge Precinct Wirraway Precinct 	<p>0.123 - Water Level (mAHD)</p>	<p>INFERRED GROUNDWATER FLOW DIRECTION</p> <p>EPA Regional Groundwater Assessment Fisherman's Bend, Melbourne, VIC</p>	<p>Figure F2</p>
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DATUM: GDA 1994 PROJECTION: MGA ZONE 55
 0 50 100 200
 metres (when printed at A1)
 1:3,700

LEGEND

- Existing Well
- 250m Grid
- Employment
- PFAS Signature Dominated by Sulphonates
- PFAS Analysis Undertaken
- New Well
- Boeing land
- Lorimer Precinct
- PFAS Signature Dominated by Acids
- DSTO land
- Montague Precinct
- PFAS Signature Contains Equal Proportion of Sulphonates + Acids
- GMH land
- Sandridge Precinct
- Wirraway Precinct
- Grid without Bore location

DRAFT PFAS SIGNATURES IN GROUNDWATER

EPA
 Regional Groundwater Assessment
 Fisherman's Bend, Melbourne, VIC

Figure
F3

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DATUM: GDA 1994 PROJECTION: MGA ZONE 55
 0 50 100 200
 metres
 (when printed at A1)
 1:3,700

LEGEND

- Existing Well
- New Well
- Employment
- Lorimer Precinct
- DSTO land
- Montague Precinct
- Sandridge Precinct
- Wirraway Precinct
- Grid without Bore location
- 250m Grid
- 1.1 - Dichloroethane
- CIS 1.2 - Dichloroethane
- 1.1 & CIS 1.2 - Dichloroethane
- 1.1 - Dichloroethane Exceeds Potable Water Guideline
- + VOC Analysis Undertaken

DRAFT VOC DETECTIONS IN GROUNDWATER

EPA
 Regional Groundwater Assessment
 Fisherman's Bend, Melbourne, VIC

Figure
F4

Map Document: (\\aunet1\p01\proj\60537182\1204 Tech work\60499\GIS2_Maps\F4_VOC_Detections.mxd)

A1 8/26

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<p>PROJECT ID: 60527182 CREATED BY: DIB LAST MODIFIED: 08/08/2017 www.aecom.com</p> <p>DATUM: GDA 1994 PROJECTION: MGA ZONE 55 0 50 100 200 metres (when printed at A1)</p>	<p>LEGEND</p> <ul style="list-style-type: none"> + Existing Well + New Well Boeing land DSTO land GMH land Grid without Bore location Employment Lorimer Precinct Montague Precinct Sandridge Precinct Wirraway Precinct ● TDS < 500 mg/L ● TDS > 10,000 mg/L ● 123 - TDS Concentration (mg/L) 	<p>DRAFT TDS CONCENTRATIONS (mg/L)</p> <table border="1"> <tr> <td>EPA Regional Groundwater Assessment Fisherman's Bend, Melbourne, VIC</td> <td>Figure F5</td> </tr> </table>	EPA Regional Groundwater Assessment Fisherman's Bend, Melbourne, VIC	Figure F5
EPA Regional Groundwater Assessment Fisherman's Bend, Melbourne, VIC	Figure F5			

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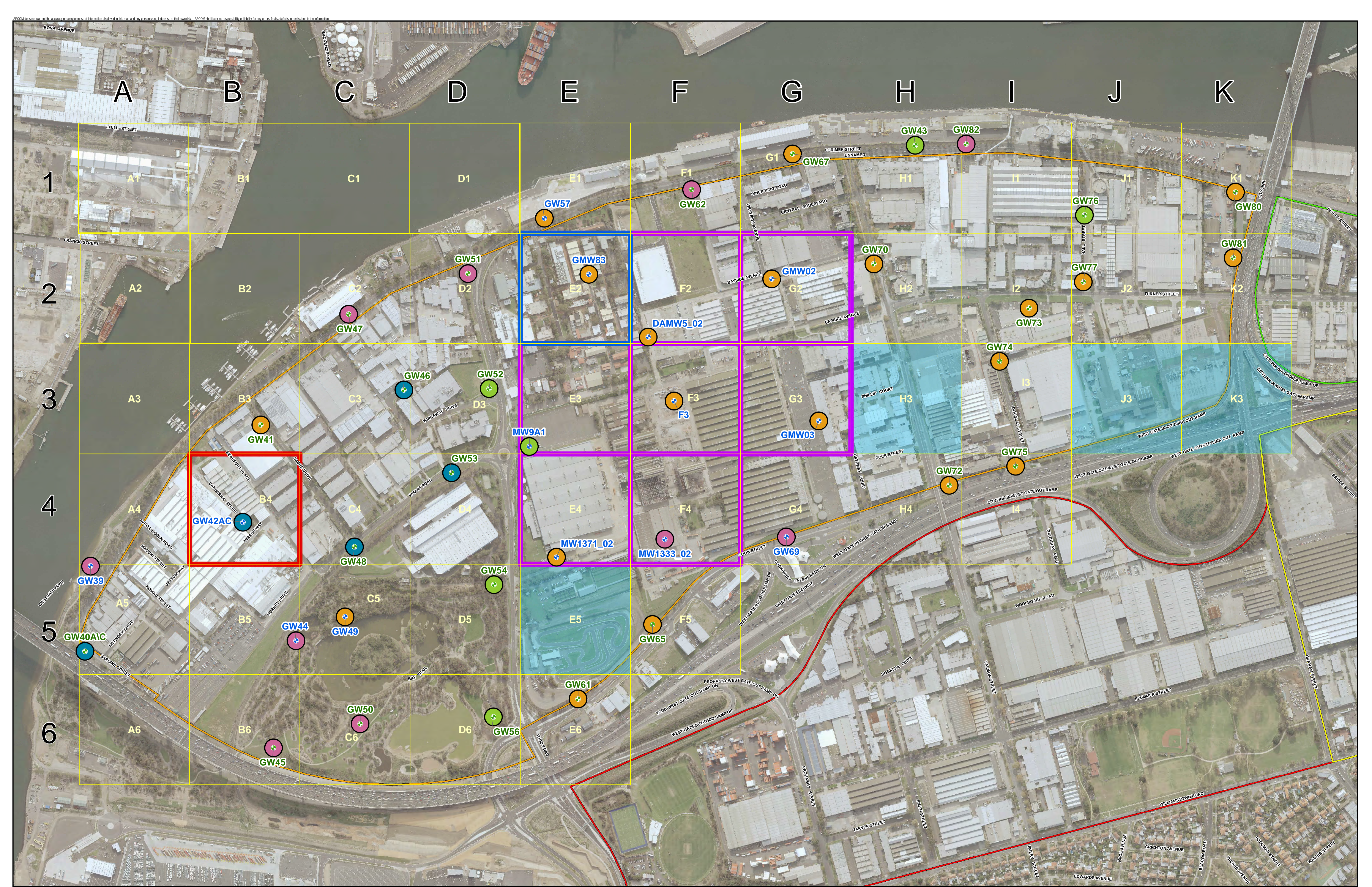
PROJECT ID: 60527182
 CREATED BY: DUB
 LAST MODIFIED: 08/08/2017
 www.aecom.com

DATUM: GDA 1994 PROJECTION: MGA ZONE 55
 0 50 100 200
 metres (when printed at A1)
 1:3,700

LEGEND

- Existing Well
- 250m Grid
- Employment
- Boeing land
- Lorimer Precinct
- DSTO land
- Montague Precinct
- Sandridge Precinct
- GMH land
- Wirraway Precinct
- Grid without Bore location
- Calcium
- Sodium
- Mixed

Dominant Cation	
EPA	Figure
Regional Groundwater Assessment	F6
Fisherman's Bend, Melbourne, VIC	



PROJECT ID: 60527182
 CREATED BY: DIB
 LAST MODIFIED: 08/08/2017
 www.aecom.com

LEGEND

Existing Well	250m Grid	Employment	Bicarbonate	Sulphate
New Well	Boeing land	Lorimer Precinct	Chloride	Mixed
	DSTO land	Montague Precinct		
	GMH land	Sandridge Precinct		
	Grid without Bore location	Wirraway Precinct		

Dominant Anion

EPA	Figure
Regional Groundwater Assessment	F7
Fisherman's Bend, Melbourne, VIC	

Map Document: (\\aunet1\p01\proj\60527182\Tech\work\60527182\F7_Domain_Annul.mxd)



Appendix A

Results Summary Tables

Table with columns: Polynuclear Aromatic Hydrocarbons, Metals, Halogenated Aromatic Compounds. Rows include EQ, 60537182_Buildings & Structures AS2159 Piling - Design & Installation (2009), 60537182_Ecosystems Screening NEPM 2013 Residential & Public Open Space, 60537182_Health Screening NEPM 2013 Residential A, 60537182_Health Screening NEPM 2013 Residential B, 60537182_Vapour Intrusion HSL A/B for Vapour Intrusion, Sand. Sub-rows for 0-1m, 1-2m, 2-4m, >4m.

Main data table with columns: Field ID, Location, Sample, Depth, Range, Sampled Date, Time, Lab Report, Sample Type, and 36 chemical concentration columns (mg/kg).

Statistical Summary

Summary table with rows: Number of Results, Number of Detects, Minimum Concentration, Minimum Detect, Maximum Concentration, Maximum Detect, Average Concentration, Median Concentration, Standard Deviation, Number of Guideline Exceedances, Number of Guideline Exceedances (Detects Only).

Env Stds Comments

- #1:CCME 2007
#2:Site-specific EIL, average pH 7.8 and assuming 5% CEC, 1% clay, old suburb, low traffic
#3:IWRG621
#4:USEPA RSLs November 2015
#5:Cr (VI) HIL

	halomethanes			Physico-Chemical Parameters				Oxygenated Compounds					Sulfonated Compounds	Inorganics	
	Bromoform	Chloroform	Dibromochloromethane	Moisture Content	2-Propanone (Acetone)	Vinyl acetate	2-Butanone (MEK)	2-hexanone (MIBK)	4-Methyl-2-pentanone (MIBK)	Carbon disulfide	pH (aqueous extract)	pH (CaCl2)			
	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Units	pH Units			
EQL	0.5	0.5	0.5	1	0.5	5	0.5	5	0.5	0.5	0.1	0.1			
60537182_Buildings & Structures AS2159 Piling - Design & Installation (2009)												<5.5-5.5			
60537182_Ecosystems Screening NEPM 2013 Residential & Public Open Space												6-8 ^{#1}			
60537182_Health Screening NEPM 2013 Residential A	190 ^{#4}	3.2 ^{#4}			61000 ^{#4}	910 ^{#4}	27000 ^{#4}	200 ^{#4}	33000 ^{#4}	770 ^{#4}					
60537182_Health Screening NEPM 2013 Residential B	190 ^{#4}	3.2 ^{#4}			61000 ^{#4}	910 ^{#4}	27000 ^{#4}	200 ^{#4}	33000 ^{#4}	770 ^{#4}					
60537182_Vapour Intrusion HSL A/B for Vapour Intrusion, Sand															
0-1m															
1-2m															
2-4m															
>4m															

Field ID	Location	Sample Depth	Range	Sampled Date	Time	Lab Report	Sample Type	Bromoform	Chloroform	Dibromochloromethane	Moisture Content	2-Propanone (Acetone)	Vinyl acetate	2-Butanone (MEK)	2-hexanone (MIBK)	4-Methyl-2-pentanone (MIBK)	Carbon disulfide	pH (aqueous extract)	pH (CaCl2)
GW40_0.50	GW40	0.5		18/04/2017		EM1704834	Normal	<0.5	<0.5	<0.5	23.3	-	<5	<5	<5	<5	<0.5	-	7.7
GW40_3.00	GW40	3		21/04/2017		EM1705075	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW41_1.80	GW41	1.8		20/04/2017		EM1704980	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW43_2.50	GW43	2.5		20/04/2017		EM1704980	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW43_4.00	GW43	4		20/04/2017		EM1704980	Normal	<0.5	<0.5	<0.5	19.7	-	<5	<5	<5	<5	<0.5	-	7.9
GW45_2.00	GW45	2		19/04/2017		EM1704939	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW46_0.50	GW46	0.5		18/04/2017		EM1704834	Normal	<0.5	<0.5	<0.5	9.5	-	<5	<5	<5	<5	<0.5	-	7.8
GW46_3.0B	GW46	3		24/04/2017		EM1705226	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW47_0.50	GW47	0.5		13/04/2017		EM1704753	Normal	<0.5	<0.5	<0.5	<1	-	<5	<5	<5	<5	<0.5	-	5.4
GW47_3.00	GW47	3		21/04/2017		EM1705075	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW48_3.00	GW48	3		20/04/2017		EM1704980	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW50_2.50	GW50	2.5		20/04/2017		EM1704980	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW51_2.10	GW51	2.1		20/04/2017		EM1704980	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW52_0.50	GW52	0.5		11/04/2017		EM1704573	Normal	-	-	-	11.7	-	-	-	-	-	-	-	4.6
GW52_3.00	GW52	3		21/04/2017		EM1705075	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW53_3.00	GW53	3		21/04/2017		EM1705075	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW54_2.60	GW54	2.6		19/04/2017		EM1704939	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW56_2.5-2.6	GW56	2.5-2.6		19/04/2017		EM1704939	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW61_2.50	GW61	2.5		24/04/2017		EM1705226	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW61_3.00	GW61	3		24/04/2017		EM1705226	Normal	<0.5	<0.5	<0.5	17.4	-	<5	<5	<5	<5	<0.5	-	-
GW62_0.50	GW62	0.5		19/04/2017		EM1704939	Normal	<0.5	<0.5	<0.5	9.2	-	<5	<5	<5	<5	<0.5	-	8
GW62_2.7A	GW62	2.7		24/04/2017		EM1705226	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW65_0.05	GW65	0.05		12/04/2017		EM1704573	Normal	<0.5	<0.5	<0.5	15.8	-	<5	<5	<5	<5	<0.5	-	7.4
GW65_0.50	GW65	0.5		13/04/2017		EM1704573	Normal	<0.5	<0.5	<0.5	17.9	-	<5	<5	<5	<5	<0.5	-	7.5
GW65_3.5	GW65	3.5		26/04/2017		EM1705226	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW67_2.30	GW67	2.3		19/04/2017		EM1704939	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW70_0.50	GW70	0.5		11/04/2017		EM1704573	Normal	-	-	-	10.2	-	-	-	-	-	-	-	7.6
GW70_2.0A	GW70	2		24/04/2017		EM1705226	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW72_3.00	GW72	3		21/04/2017		EM1705075	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW73_3.5	GW73	3.5		26/04/2017		EM1705226	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW74_4.0A	GW74	4		24/04/2017		EM1705226	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW75_1.00	GW75	1		10/04/2017		EM1704573	Normal	-	-	-	12.3	-	-	-	-	-	-	-	7.4
GW75_3.00	GW75	3		24/04/2017		EM1705226	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW76_3.00	GW76	3		24/04/2017		EM1705226	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW77_3.5	GW77	3.5		26/04/2017		EM1705226	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW80_3.00	GW80	3		21/04/2017		EM1705075	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW81_3.50	GW81	3.5		21/04/2017		EM1705075	Normal	-	-	-	-	-	-	-	-	-	-	-	-
GW82_0.50	GW82	0.5		12/04/2017		EM1704688	Normal	-	-	-	5.6	-	-	-	-	-	-	-	-
GW82_2.50	GW82	2.5		21/04/2017		EM1705075	Normal	-	-	-	-	-	-	-	-	-	-	-	-
QC15				20/04/2017		EM1704980	Normal	<0.5	<0.5	<0.5	19.8	-	<5	<5	<5	<5	<0.5	-	7.9
QC16				20/04/2017		543256	Normal	<0.5	<0.5	<0.5	19	<0.5	-	<0.5	-	<0.5	<0.5	8.4	-

Statistical Summary																		
Number of Results	10	10	10	14	1	9	10	9	10	10	1	11						
Number of Detects	0	0	0	13	0	0	0	0	0	0	1	11						
Minimum Concentration	<0.5	<0.5	<0.5	<1	<0.5	<5	<0.5	<5	<0.5	<0.5	8.4	4.6						
Minimum Detect	ND	ND	ND	5.6	ND	ND	ND	ND	ND	ND	8.4	4.6						
Maximum Concentration	<0.5	<0.5	<0.5	23.3	<0.5	<5	<5	<5	<5	<0.5	8.4	8						
Maximum Detect	ND	ND	ND	23.3	ND	ND	ND	ND	ND	ND	8.4	8						
Average Concentration	0.25	0.25	0.25	14	2.5	2.3	2.5	2.3	2.5	0.25	7.2	7.6						
Median Concentration	0.25	0.25	0.25	14.05	0.25	2.5	2.5	2.5	2.5	0.25	8.4	7.6						
Standard Deviation	0	0	0	6.4	0	0.71	0	0.71	0	0	1.1	1.1						
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	11						
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	11						

Env Stds Comments
 #1:CCME 2007
 #2:Site-specific EIL, average pH 7.8 and assuming 5% CEC, 1% clay, old suburb, low traffic
 #3:IWRG621
 #4:USEPA RSLs November 2015
 #5:Cr (VI) HIL

Table A2
Summary of Groundwater Results
Fishermans Bend
EPA Victoria

	Total Organic Carbon	o-Chemical Parant		Total Recoverable Hydrocarbons						Monocyclic Aromatic Hydrocarbons													Polynuclear														
		Total Dissolved Solids	pH (Lab)	C6-C10 fraction	C6-C10 fraction (minus BTEX)(F1)	>C10-C16 fraction	>C10-C16 (minus Naphthalene)(F2)	>C16-C34 fraction	>C34-C40 fraction	>C10-C40 fraction (sum)	Benzene	Toluene	Ethylbenzene	m&p-Xylene	o-Xylene	Total Xylenes	Styrene	Isopropylbenzene	n-Butylbenzene	n-Propylbenzene	p-Isopropyltoluene	sec-Butylbenzene	tert-Butylbenzene	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Total BTEX	Naphthalene (VOC)	Naphthalene	Acenaphthylene	Acenaphthene	Anthracene	Fluorene	Phenanthrene	Fluoranthene	Benz(a)anthracene	Benzo(k)fluoranthene	
	mg/L	mg/L	pH Units	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	1	10	0.01	20	20	100	100	100	100	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	5	1	1	1	1	1	1	1	1	1	1	
60537182_Agriculture, Parks and Gardens																																					
60537182_Buildings and Structures			5.5 ^{#3}																																		
60537182_Maintenance of Ecosystems				150 ^{#4}						600 ^{#5}	900 ^{#6}	180 ^{#7}	5 ^{#7}		350 ^{#7}																						
60537182_Potable Water Supply																																					
60537182_Primary Contact Recreation				15000 ^{#23}		100 ^{#23}			900 ^{#24}						20 ^{#12}	4 ^{#12}	450 ^{#13}	1000 ^{#1}	660 ^{#13}		2000 ^{#13}	690 ^{#13}	15 ^{#13}	120 ^{#13}			6.1 ^{#13}	530 ^{#13}	800 ^{#1}	290 ^{#13}		4 ^{#7}		800 ^{#13}	0.12 ^{#13}	3.4 ^{#13}	
60537182_Stock Watering																																					
60537182_Vapour Intrusion					1000 ^{#22}		1000 ^{#22}				800 ^{#22}																										

Location	Field ID	Sampled Date Time	Lab Report	Sample Type	Sample Code	33	572	7.35	<20	<20	150	150	460	<100	610	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
DAMW5	DAMW5_02_11/5/17	11/05/2017	EM1705994	Normal	EM1705994010	33	572	7.35	<20	<20	150	150	460	<100	610	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
F3	F3_170517	16/05/2017	EM1706246	Normal	EM1706246021	7	282	6.56	<20	<20	<100	<100	230	<100	230	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
GMW02	GMW02_120517	12/05/2017	EM1706071	Normal	EM1706071005	14	663	7.2	<20	<20	<100	<100	220	<100	220	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
GMW03	GMW03_11/5/17	11/05/2017	EM1705994	Normal	EM1705994009	28	494	7.54	<20	<20	230	230	680	<100	910	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
GMW83	GMW83_11/5/17	11/05/2017	EM1705994	Normal	EM1705994014	4	851	6.17	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
GW01	GW01_10/07/17	10/07/2017	EM1709029	Normal	EM1709029001	40	2,910	7.68	<20	<20	120	120	240	<100	360	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
GW07	GW07_10/07/17	10/07/2017	EM1709029	Normal	EM1709029002	21	1,380	7.28	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
GW31	GW31_10/07/17	10/07/2017	EM1709029	Normal	EM1709029005	15	6,920	6.97	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
GW34	GW34_10/07/17	10/07/2017	EM1709029	Normal	EM1709029006	10	1,960	7.54	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
GW39	GW39_160517	16/05/2017	EM1706246	Normal	EM1706246009	32	1,680	7.12	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
GW40A/C	GW40A/C_120517	12/05/2017	EM1706071	Normal	EM1706071002	13	3,830	5.07	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
GW41	GW41_11/5/17	11/05/2017	EM1705994	Normal	EM1705994020	15	1,100	7.28	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
GW42AC	GW42AC_10/5/17	10/05/2017	EM1705994	Normal	EM1705994004	22	349	5.53	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
GW43	GW43_9/5/17	9/05/2017	EM1707203	Normal	EM1707203001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
GW43	GW43_9/5/17	9/05/2017	EM1705809	Normal	EM1705809004	7	620	5.98	<20	<20	<100	<100	260	<100	260	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
GW44	GW44_160517	16/05/2017	EM1706246	Normal	EM1706246011	44	10,100	7.75	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
GW45	GW45_160517	16/05/2017	EM1706246	Normal	EM1706246018	27	4,900	7.6	<20	<20	<100	<100	310	<100	310	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
GW46	GW46_160517	16/05/2017	EM1706246	Normal	EM1706246002	9	980	7.14	20	20	<100	<100	250	<100	250	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
GW47	GW47_160517	16/05/2017	EM1706246	Normal	EM1706246015	13	9,210	7.59	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
GW48	GW48_11/5/17	11/05/2017	EM1705994	Normal	EM1705994021	33	2,470	6.91	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
GW49	GW49_160517	16/05/2017	EM1706246	Normal	EM1706246010	7	124	6.93	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
GW50	GW50_160517	16/05/2017	EM1706246	Normal	EM1706246017	67	12,800	7.44	<20	<20	<100	<100	130	<100	130	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
GW51	GW51_11/5/17	11/05/2017	EM1705994	Normal	EM1705994019	15	3,690	6.41	<20	<20	<100	<100	<100	<100																										

Table A2
Summary of Groundwater Results
Fishermans Bend
EPA Victoria

	Organic Matter		o-Chemical Param		Total Recoverable Hydrocarbons						Monocyclic Aromatic Hydrocarbons													Polynuclea												
	Total Organic Carbon	Total Dissolved Solids	pH (Lab)	C6-C10 fraction	C6-C10 fraction (minus BTEX)(F1)	>C10-C16 fraction	>C10-C16 (minus Naphthalene)(F2)	>C16-C34 fraction	>C34-C40 fraction	>C10-C40 fraction (sum)	Benzene	Toluene	Ethylbenzene	m&p-Xylene	o-Xylene	Total Xylenes	Styrene	Isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	tert-butylbenzene	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Total BTEX	Naphthalene (VOC)	Naphthalene	Acenaphthylene	Acenaphthene	Anthracene	Fluorene	Phenanthrene	Fluoranthene	Benz(a)anthracene	Benzo(k)fluoranthene
EQI	mg/L	mg/L	pH Units	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
60537182_Agriculture, Parks and Gardens	1	10	0.01	20	20	100	100	100	100	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	5	1	1	1	1	1	1	1	1	1
60537182_Buildings and Structures			5.5 ^{#3}																																	
60537182_Maintenance of Ecosystems				150 ^{#4}					600 ^{#5}	900 ^{#6}	180 ^{#7}	5 ^{#7}		350 ^{#7}			30 ^{#7}										90 ^{#6}			1.5 ^{#7}	1 ^{#7}		4 ^{#7}			
60537182_Potable Water Supply										1 ^{#11}	25 ^{#12}	3 ^{#12}		350 ^{#7}		20 ^{#12}	4 ^{#12}	450 ^{#13}	1000 ^{#1}	660 ^{#13}		2000 ^{#13}	690 ^{#13}	15 ^{#13}	120 ^{#13}		6.1 ^{#13}		530 ^{#13}	1800 ^{#1}	290 ^{#13}		800 ^{#13}	0.12 ^{#13}	3.4 ^{#13}	
60537182_Primary Contact Recreation				15000 ^{#23}		100 ^{#23}		900 ^{#24}		1 ^{#11}	800 ^{#11}	300 ^{#11}		600 ^{#11}		30 ^{#11}	450 ^{#13}	1000 ^{#1}	660 ^{#13}		2000 ^{#13}	690 ^{#13}	15 ^{#13}	120 ^{#13}		6.1 ^{#13}		5300 ^{#13}	8000 ^{#1}	2900 ^{#15}		8000 ^{#1}	1.2 ^{#15}	3.4 ^{#15}		
60537182_Stock Watering										1 ^{#18}	800 ^{#18}	300 ^{#18}		600 ^{#18}		30 ^{#18}	450 ^{#13}	1000 ^{#1}	660 ^{#13}		2000 ^{#13}	690 ^{#13}	15 ^{#13}	120 ^{#13}		6.1 ^{#13}		530 ^{#13}	1800 ^{#1}	290 ^{#13}		800 ^{#13}	0.12 ^{#13}	3.4 ^{#13}		
60537182_Vapour Intrusion					1000 ^{#22}		1000 ^{#22}			800 ^{#22}																										

Location	Field ID	Sampled Date	Time	Lab Report	Sample Type	SampleCode																															
Number of Guideline Exceedances		0	0	47	0	0	7	0	1	0	5	3	0	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)		0	0	47	0	0	7	0	1	0	5	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments

#1:ANZECC 2000 LTV□
#2:ANZECC 2000 LTV - Long term trigger value for total nitrogen□
#3:AS2159□
#4:Dutch 1989f□
#5:Dutch 2009 Intervention Value□
#6:ANZECC 2000 Marine 90%□
#7:ANZECC 2000 Low Reliability Value□
#8:ANZECC 2000 Low Reliability Value - Cr(VI) low reliability value□
#9:ANZECC 2000 Marine 90% - Adjusted for average laboratory pH of 7.1□
#10:ANZECC 2000 Marine 90% - 90% grading value from Hickey (2013)□
#11:ADWG 2016 Health□
#12:ADWG 2016 Aesthetic□
#13:USEPA RSLs November 2015□
#14:WHO 2011□
#15:USEPA RSLs November 2015 x10□
#16:ADWG 2016 Health x10□
#17:ADWG 2016 Health - Odour threshold conservatively adopted (converted from 1.5 mg/L ammonia as NH3)□
#18:ADWG 2011 Health□
#19:ANZECC 2000 Stock water□
#20:ANZECC 2000 Stock water - (sheep)□
#21:ADWG 2011 Health - Odour threshold conservatively adopted (converted from 1.5 mg/L ammonia as NH3)□
#22:NEPM 2013 >2-4m, Sand□
#23:WHO 2008 - Drinking-water Quality□
#24:WHO 2008 - Drinking-water Quality x 10□
#25:Department of Health (April 2017), Health Based Guidance Values for PFAS for use in site investigations in Australia - Drinking water quality value□
#26:Department of Health (April 2017), Health Based Guidance Values for PFAS for use in site investigations in Australia - Recreational water quality value□
#27:ANZECC 2000 Freshwater Aquatic Ecosystems 99% Protection□

Data Comments

#1 The LORs have been raised due to matrix interference

Table A2
Summary of Groundwater Results
Fishermans Bend
EPA Victoria

	Aromatic Hydrocarbons										Metals																					
	Benzo(a,b)fluoranthene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (zero)	Chrysene	Pyrene	Benzo(g,h,i)perylene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Sum of PAHs	Aluminium	Aluminium (Filtered)	Arsenic	Arsenic (Filtered)	Cadmium	Cadmium (Filtered)	Chromium	Chromium (Filtered)	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Lead (Filtered)	Manganese	Manganese (Filtered)	Mercury	Mercury (Filtered)	Nickel	Nickel (Filtered)	Selenium	Selenium (Filtered)	Zinc
	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	mg/L	mg/L	mg/L	mg/L	
EQL	1	0.5	0.5	1	1	1	1	1	0.5	0.01	0.01	0.001	0	1E-04	0.0001	0	0.001	0.001	0	0.05	0.05	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005
60537182_Agriculture, Parks and Gardens										0.0005 [#]	0.0005 [#]	0.0045 [#]	0.0045 [#]	0.0014 [#]	0.0014 [#]	0.0044 [#]	0.0044 [#]	0.003 [#]	0.003 [#]	0.3 [#]	0.3 [#]	0.006 [#]	0.006 [#]	0.08 [#]	0.08 [#]	0.0007 [#]	0.0007 [#]	0.2 [#]	0.2 [#]	0.003 [#]	0.003 [#]	0.023 [#]
60537182_Buildings and Structures																																
60537182_Maintenance of Ecosystems		0.4 [#]								0.0005 [#]	0.0005 [#]	0.0045 [#]	0.0045 [#]	0.0014 [#]	0.0014 [#]	0.0044 [#]	0.0044 [#]	0.003 [#]	0.003 [#]	0.3 [#]	0.3 [#]	0.006 [#]	0.006 [#]	0.08 [#]	0.08 [#]	0.0007 [#]	0.0007 [#]	0.2 [#]	0.2 [#]	0.003 [#]	0.003 [#]	0.023 [#]
60537182_Potable Water Supply	340 ^{#13}	0.01 ^{#11}		34 ^{#13}	120 ^{#13}		0.034 ^{#1}	0.34 ^{#13}		0.2 ^{#12}	0.2 ^{#12}	0.01 ^{#11}	0.01 ^{#11}	0.002 ^{#11}	0.002 ^{#11}	0.05 ^{#11}	0.05 ^{#11}	1 ^{#12}	1 ^{#12}	0.3 ^{#12}	0.3 ^{#12}	0.01 ^{#11}	0.01 ^{#11}	0.1 ^{#12}	0.1 ^{#12}	0.001 ^{#11}	0.001 ^{#11}	0.02 ^{#11}	0.02 ^{#11}	0.01 ^{#11}	0.01 ^{#11}	3 ^{#12}
60537182_Primary Contact Recreation	3400 ^{#15}	0.1 ^{#16}		340 ^{#15}	1200 ^{#15}		0.34 ^{#15}	3.4 ^{#15}		0.2 ^{#12}	0.2 ^{#12}	0.1 ^{#16}	0.1 ^{#16}	0.02 ^{#16}	0.02 ^{#16}	0.5 ^{#16}	0.5 ^{#16}	20 ^{#16}	20 ^{#16}	0.3 ^{#12}	0.3 ^{#12}	0.1 ^{#16}	0.1 ^{#16}	0.5 ^{#11}	0.5 ^{#11}	0.01 ^{#16}	0.01 ^{#16}	0.01 ^{#16}	0.01 ^{#16}	0.2 ^{#16}	0.2 ^{#16}	3 ^{#11}
60537182_Stock Watering	340 ^{#13}	0.01 ^{#18}		34 ^{#13}	120 ^{#13}		0.034 ^{#13}	0.34 ^{#13}		5 ^{#19}	5 ^{#19}	0.5 ^{#19}	0.5 ^{#19}	0.01 ^{#19}	0.01 ^{#19}	0.5 ^{#19}	0.5 ^{#19}	5 ^{#20}	5 ^{#20}			0.1 ^{#19}	0.1 ^{#19}	0.5 ^{#18}	0.5 ^{#18}	0.002 ^{#19}	0.002 ^{#19}	1 ^{#19}	1 ^{#19}	0.02 ^{#19}	0.02 ^{#19}	20 ^{#19}
60537182_Vapour Intrusion																																

Location	Field ID	Sampled Date Time	Lab Report	Sample Type	SampleCode	Benzo(a,b)fluoranthene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (zero)	Chrysene	Pyrene	Benzo(g,h,i)perylene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Sum of PAHs	Aluminium	Aluminium (Filtered)	Arsenic	Arsenic (Filtered)	Cadmium	Cadmium (Filtered)	Chromium	Chromium (Filtered)	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Lead (Filtered)	Manganese	Manganese (Filtered)	Mercury	Mercury (Filtered)	Nickel	Nickel (Filtered)	Selenium	Selenium (Filtered)	Zinc	
DAMW5	DAMW5_02_11/5/17	11/05/2017	EM1705994	Normal	EM1705994010	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	0.47	0.05	0.007	0.006	0.0004	<0.0001	0.004	0.001	0.003	<0.001	6.35	5.41	0.003	<0.001	0.27	0.262	<0.0001	<0.0001	0.018	0.017	<0.01	<0.01	0.039	
F3	F3_170517	16/05/2017	EM1706246	Normal	EM1706246021	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	2.93	0.03	0.006	0.003	0.0001	<0.0001	0.015	<0.001	0.009	<0.001	17.2	6.97	0.012	<0.001	0.841	0.64	<0.0001	<0.0001	0.041	0.024	<0.01	<0.01	0.161	
GMW02	GMW02_120517	12/05/2017	EM1706071	Normal	EM1706071005	<1	<0.5	<0.6	<1	<1	<1	<1	<1	<0.6	2.24	0.04	0.023	0.008	<0.0001	<0.0001	0.008	0.001	0.01	<0.001	10.4	3.58	0.03	<0.001	-	0.12	<0.0001	<0.0001	0.113	0.143	<0.01	<0.01	0.114	
GMW03	GMW03_11/5/17	11/05/2017	EM1705994	Normal	EM1705994009	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	2.47	0.06	0.125	0.05	0.0001	<0.0001	0.014	0.003	0.019	<0.001	15.6	4.21	0.009	<0.001	0.124	0.099	<0.0001	<0.0001	0.026	0.024	<0.01	<0.01	0.056	
GMW83	GMW83_11/5/17	11/05/2017	EM1705994	Normal	EM1705994014	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	2.78	0.1	0.011	<0.001	<0.0001	0.01	0.002	0.005	0.001	0.005	0.001	3.6	0.07	0.008	<0.001	0.013	0.007	<0.0001	<0.0001	0.086	0.074	<0.01	<0.01	0.382
GW01	GW01_10/07/17	10/07/2017	EM1709029	Normal	EM1709029001	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	0.04	<0.01	0.002	0.002	<0.0001	<0.0001	0.004	0.003	0.006	<0.001	3.94	3.53	0.006	<0.001	0.113	0.12	<0.0001	<0.0001	0.044	0.039	<0.01	<0.01	0.038	
GW07	GW07_10/07/17	10/07/2017	EM1709029	Normal	EM1709029002	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	4.02	0.02	0.031	0.01	<0.0001	<0.0001	0.014	0.002	0.013	0.001	18.9	6.89	0.054	<0.001	0.159	0.15	<0.0001	<0.0001	0.025	0.011	<0.01	<0.01	0.041	
GW31	GW31_10/07/17	10/07/2017	EM1709029	Normal	EM1709029005	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	20	<0.01	0.062	0.014	<0.0001	<0.0001	0.046	<0.001	0.02	<0.001	63.4	27.4	0.066	<0.001	0.507	0.353	<0.0001	<0.0001	0.034	0.006	<0.01	<0.01	0.083	
GW34	GW34_10/07/17	10/07/2017	EM1709029	Normal	EM1709029006	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	4.46	<0.01	0.033	<0.001	<0.0001	0.013	0.001	0.004	<0.001	9.71	0.05	0.006	<0.001	0.128	0.088	<0.0001	<0.0001	0.006	0.002	<0.01	<0.01	0.991		
GW39	GW39_160517	16/05/2017	EM1706246	Normal	EM1706246009	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	0.7	0.1	0.1	0.025	<0.0001	<0.0001	0.006	0.003	0.004	0.002	20.2	10.2	0.006	<0.001	0.055	0.049	<0.0001	<0.0001	0.008	0.004	<0.01	<0.01	0.023	
GW40A/C	GW40A/C_120517	12/05/2017	EM1706071	Normal	EM1706071002	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	10	1.73	0.01	0.002	0.0004	0.0003	0.019	0.002	0.017	0.007	10.5	2.84	0.009	0.001	-	0.64	<0.0001	<0.0001	0.11	0.103	<0.01	<0.01	0.459	
GW41	GW41_11/5/17	11/05/2017	EM1705994	Normal	EM1705994020	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	24.9	0.1	0.032	0.004	<0.0001	<0.0001	0.064	0.001	0.017	<0.001	38	0.64	0.027	<0.001	0.112	0.029	<0.0001	<0.0001	0.036	0.005	<0.01	<0.01	2.26	
GW42AC	GW42AC_10/5/17	10/05/2017	EM1705994	Normal	EM1705994004	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	3.73	1.63	0.023	0.021	<0.0001	<0.0001	0.012	0.006	0.001	<0.001	2.89	1.74	<0.001	<0.001	0.328	0.319	<0.0001	<0.0001	0.018	0.021	<0.01	<0.01	0.038	
GW43	GW43_9/5/17	9/05/2017	EM1707203	Normal	EM1707203001	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GW43	GW43_9/5/17	9/05/2017	EM1705809	Normal	EM1705809004	-	-	-	-	-	-	-	-	-	12.3	0.11	0.019	0.004	0.0004	<0.0001	0.048	<0.001	0.028	<0.001	29.2	3.36	0.014	<0.001	0.418	0.333	<0.0001	<0.0001	0.108	0.078	<0.01	<0.01	0.353	
GW44	GW44_160517	16/05/2017	EM1706246	Normal	EM1706246011	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	3.3	0.03	0.007	<0.001	<0.0001	0.013	0.003	0.005	<0.001	7.12	1.22	0.003	<0.001	0.068	0.038	<0.0001	<0.0001	0.147	0.119	<0.01	<0.01	0.106		
GW45	GW45_160517	16/05/2017	EM1706246	Normal	EM1706246018	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	11.4	0.04	0.036	0.006	0.0002	<0.0001	0.037	0.002	0.029	<0.001	19.8	1.13	0.076	<0.001	0.793	0.623	<0.0001	<0.0001	0.122	0.057	<0.01	<0.01	0.135	
GW46	GW46_160517	16/05/2017	EM1706246	Normal	EM1706246002	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	19.9	0.06	0.043	0.002	0.0007	<0.0001	0.065	<0.001	0.061	<0.001	40.7	3.98	0.027	<0.001	0.402	0.285	<0.0001	<0.0001	0.058	0.003	<0.01	<0.01	0.208	
GW47	GW47_160517	16/05/2017	EM1706246	Normal	EM1706246015	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<0.5	6.42	0.04	0.016	0.008	<0.0001	<0.0001	0.017	0.001	0.011	<0.001	9.38	1.07	0.006	<0.001	0.282	0.232	<0.0001	<0.0001	0.056	0.044	<0.01	<0.01		

Table A2
Summary of Groundwater Results
Fishermans Bend
EPA Victoria

	Aromatic Hydrocarbons										Metals																						
	Benzo(b&j)fluoranthene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (zero)	Chrysene	Pyrene	Benzo(g,h,i)perylene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Sum of PAHs	Aluminium	Aluminium (Filtered)	Arsenic	Arsenic (Filtered)	Cadmium	Cadmium (Filtered)	Chromium	Chromium (Filtered)	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Lead (Filtered)	Manganese	Manganese (Filtered)	Mercury	Mercury (Filtered)	Nickel	Nickel (Filtered)	Selenium	Selenium (Filtered)	Zinc	
EQL	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	mg/L	mg/L	mg/L	mg/L		
60537182_Agriculture, Parks and Gardens	1	0.5	0.5	1	1	1	1	1	0.5	5 ^{#1}	5 ^{#1}	0.1 ^{#1}	0.1 ^{#1}	0.01 ^{#1}	0.01 ^{#1}	0.1 ^{#1}	0.001	0	0.05	0.05	0.001	0.001	0.001	0.001	0.0001	0.0001	0.001	0.001	0.01	0.01	0.005		
60537182_Buildings and Structures																																	
60537182_Maintenance of Ecosystems		0.4 ^{#7}							0.0005 ^{#1}	0.0005 ^{#2}	0.0045 ^{#7}	0.0045 ^{#7}	0.0014 ^{#8}	0.0014 ^{#8}	0.0044 ^{#8}	0.0044 ^{#8}	0.003 ^{#6}	0.003 ^{#6}	0.3 ^{#7}	0.3 ^{#7}	0.0066 ^{#6}	0.0066 ^{#6}	0.08 ^{#7}	0.08 ^{#7}	0.0007 ^{#6}	0.0007 ^{#6}	0.0007 ^{#6}	0.0007 ^{#6}	0.2 ^{#6}	0.2 ^{#6}	0.003 ^{#7}	0.003 ^{#7}	0.023 ^{#6}
60537182_Potable Water Supply	340 ^{#13}	0.01 ^{#11}		34 ^{#13}	120 ^{#13}	0.034 ^{#1}	0.34 ^{#13}		0.2 ^{#12}	0.2 ^{#12}	0.01 ^{#11}	0.01 ^{#11}	0.002 ^{#11}	0.002 ^{#11}	0.05 ^{#11}	0.05 ^{#11}	1 ^{#12}	1 ^{#12}	0.3 ^{#12}	0.3 ^{#12}	0.01 ^{#11}	0.01 ^{#11}	0.1 ^{#12}	0.1 ^{#12}	0.001 ^{#11}	0.001 ^{#11}	0.001 ^{#11}	0.001 ^{#11}	0.02 ^{#11}	0.02 ^{#11}	0.01 ^{#11}	0.01 ^{#11}	3 ^{#12}
60537182_Primary Contact Recreation	3400 ^{#15}	0.1 ^{#16}		340 ^{#15}	1200 ^{#15}	0.34 ^{#11}	3.4 ^{#15}		0.2 ^{#12}	0.2 ^{#12}	0.1 ^{#16}	0.1 ^{#16}	0.02 ^{#16}	0.02 ^{#16}	0.5 ^{#16}	0.5 ^{#16}	20 ^{#16}	20 ^{#16}	0.3 ^{#12}	0.3 ^{#12}	0.1 ^{#16}	0.1 ^{#16}	0.5 ^{#11}	0.5 ^{#11}	0.01 ^{#16}	0.01 ^{#16}	0.01 ^{#16}	0.01 ^{#16}	0.2 ^{#16}	0.2 ^{#16}	0.1 ^{#16}	0.1 ^{#16}	3 ^{#11}
60537182_Stock Watering	340 ^{#13}	0.01 ^{#18}		34 ^{#13}	120 ^{#13}	0.034 ^{#1}	0.34 ^{#13}		5 ^{#19}	5 ^{#19}	0.5 ^{#19}	0.5 ^{#19}	0.01 ^{#19}	0.01 ^{#19}	0.5 ^{#19}	0.5 ^{#19}	0.5 ^{#20}	0.5 ^{#20}			0.1 ^{#19}	0.1 ^{#19}	0.5 ^{#18}	0.5 ^{#18}	0.002 ^{#19}	0.002 ^{#19}	0.002 ^{#19}	0.002 ^{#19}	1 ^{#19}	1 ^{#19}	0.02 ^{#19}	0.02 ^{#19}	20 ^{#19}
60537182_Vapour Intrusion																																	

Location	Field ID	Sampled Date	Time	Lab Report	Sample Type	SampleCode																																
Number of Guideline Exceedances							0	47	0	1	0	0	47	47	0	47	47	46	28	1	0	44	8	45	4	47	44	35	0	34	35	0	0	38	26	47	47	46
Number of Guideline Exceedances(Detects Only)							0	2	0	1	0	0	1	1	0	47	42	46	28	1	0	44	8	45	4	47	44	35	0	34	35	0	0	38	26	0	0	46

Env Stds Comments

- #1: ANZECC 2000 LTV
- #2: ANZECC 2000 LTV - Long term trigger value for total nitrogen
- #3: AS2159
- #4: Dutch 1989f
- #5: Dutch 2009 Intervention Value
- #6: ANZECC 2000 Marine 90%
- #7: ANZECC 2000 Low Reliability Value
- #8: ANZECC 2000 Low Reliability Value - Cr(VI) low reliability value
- #9: ANZECC 2000 Marine 90% - Adjusted for average laboratory pH of 7.1
- #10: ANZECC 2000 Marine 90% - 90% grading value from Hickey (2013)
- #11: ADWG 2016 Health
- #12: ADWG 2016 Aesthetic
- #13: USEPA RSLs November 2015
- #14: WHO 2011
- #15: USEPA RSLs November 2015 x10
- #16: ADWG 2016 Health x10
- #17: ADWG 2016 Health - Odour threshold conservatively adopted (converted from 1.5 mg/L ammonia as NH3)
- #18: ADWG 2011 Health
- #19: ANZECC 2000 Stock water
- #20: ANZECC 2000 Stock water - (sheep)
- #21: ADWG 2011 Health - Odour threshold conservatively adopted (converted from 1.5 mg/L ammonia as NH3)
- #22: NEPM 2013 >2-4m, Sand
- #23: WHO 2008 - Drinking-water Quality
- #24: WHO 2008 - Drinking-water Quality x 10
- #25: Department of Health (April 2017), Health Based Guidance Values for PFAS for use in site investigations in Aust
- #26: Department of Health (April 2017), Health Based Guidance Values for PFAS for use in site investigations in Aust
- #27: ANZECC 2000 Freshwater Aquatic Ecosystems 99% Protection

Data Comments

#1 The LORs have been raised due to matrix interference

Table A2
 Summary of Groundwater Results
 Fishermans Bend
 EPA Victoria

EQL
60537182_Agriculture, Parks and Gardens
60537182_Buildings and Structures
60537182_Maintenance of Ecosystems
60537182_Potable Water Supply
60537182_Primary Contact Recreation
60537182_Stock Watering
60537182_Vapour Intrusion

Location	Field ID	Sampled Date Time	Lab Report	Sample Type	SampleCode
DAMW5	DAMW5_02_11/5/17	11/05/2017	EM1705994	Normal	EM1705994010
F3	F3_170517	16/05/2017	EM1706246	Normal	EM1706246021
GMW02	GMW02_120517	12/05/2017	EM1706071	Normal	EM1706071005
GMW03	GMW03_11/5/17	11/05/2017	EM1705994	Normal	EM1705994009
GMW83	GMW83_11/5/17	11/05/2017	EM1705994	Normal	EM1705994014
GW01	GW01_10/07/17	10/07/2017	EM1709029	Normal	EM1709029001
GW07	GW07_10/07/17	10/07/2017	EM1709029	Normal	EM1709029002
GW31	GW31_10/07/17	10/07/2017	EM1709029	Normal	EM1709029005
GW34	GW34_10/07/17	10/07/2017	EM1709029	Normal	EM1709029006
GW39	GW39_160517	16/05/2017	EM1706246	Normal	EM1706246009
GW40A/C	GW40A/C_120517	12/05/2017	EM1706071	Normal	EM1706071002
GW41	GW41_11/5/17	11/05/2017	EM1705994	Normal	EM1705994020
GW42AC	GW42AC_10/5/17	10/05/2017	EM1705994	Normal	EM1705994004
GW43	GW43_9/5/17	9/05/2017	EM1707203	Normal	EM1707203001
GW43	GW43_9/5/17	9/05/2017	EM1705809	Normal	EM1705809004
GW44	GW44_160517	16/05/2017	EM1706246	Normal	EM1706246011
GW45	GW45_160517	16/05/2017	EM1706246	Normal	EM1706246018
GW46	GW46_160517	16/05/2017	EM1706246	Normal	EM1706246002
GW47	GW47_160517	16/05/2017	EM1706246	Normal	EM1706246015
GW48	GW48_11/5/17	11/05/2017	EM1705994	Normal	EM1705994021
GW49	GW49_160517	16/05/2017	EM1706246	Normal	EM1706246011
GW50	GW50_160517	16/05/2017	EM1706246	Normal	EM1706246017
GW51	GW51_11/5/17	11/05/2017	EM1705994	Normal	EM1705994019
GW52	GW52_10/07/17	10/07/2017	EM1709029	Normal	EM1709029009
GW52	GW52_120517	12/05/2017	EM1706071	Normal	EM1706071001
GW53	GW53_11/5/17	11/05/2017	EM1705994	Normal	EM1705994022
GW54	GW54_160517	16/05/2017	EM1706246	Normal	EM1706246016
GW56	GW56_10/07/17	10/07/2017	EM1709029	Normal	EM1709029010
GW56	GW56_160517	16/05/2017	EM1706246	Normal	EM1706246012
GW57	GW57_9/5/17	9/05/2017	EM1707203	Normal	EM1707203002
GW57	GW57_9/5/17	9/05/2017	EM1705809	Normal	EM1705809006
GW61	GW61_160517	16/05/2017	EM1706246	Normal	EM1706246003
GW62	GW62_11/5/17	11/05/2017	EM1705994	Normal	EM1705994013
GW65	GW65_160517	16/05/2017	EM1706246	Normal	EM1706246004
GW67	GW67_9/5/17	9/05/2017	EM1707203	Normal	EM1707203003
GW67	GW67_9/5/17	9/05/2017	EM1705809	Normal	EM1705809003
GW69	GW69_160517	16/05/2017	EM1706246	Normal	EM1706246005
GW70	GW70_160517	16/05/2017	EM1706246	Normal	EM1706246001
GW72	GW72_120517	12/05/2017	EM1706071	Normal	EM1706071003
GW73	GW73_11/5/17	11/05/2017	EM1705994	Normal	EM1705994008
GW74	GW74_10/5/17	10/05/2017	EM1705994	Normal	EM1705994002
GW75	GW75_120517	12/05/2017	EM1706071	Normal	EM1706071004
GW76	GW76_10/5/17	10/05/2017	EM1705994	Normal	EM1705994003
GW77	GW77_10/5/17	10/05/2017	EM1705994	Normal	EM1705994001
GW80	GW80_8/5/17	8/05/2017	EM1707203	Normal	EM1707203004
GW80	GW80_8/5/17	8/05/2017	EM1705809	Normal	EM1705809002
GW81	GW81_8/5/17	8/05/2017	EM1707203	Normal	EM1707203005
GW81	GW81_8/5/17	8/05/2017	EM1705809	Normal	EM1705809001
GW82	GW82_9/5/17	9/05/2017	EM1707203	Normal	EM1707203006
GW82	GW82_9/5/17	9/05/2017	EM1705809	Normal	EM1705809005
MW1333_02	MW1333_02_120517	12/05/2017	EM1706071	Normal	EM1706071006
MW1371	MW1371_02_11/5/17	11/05/2017	EM1705994	Normal	EM1705994016
MW9AI	MW9AI_11/5/17	11/05/2017	EM1705994	Normal	EM1705994015

Statistical Summary

Number of Results
Number of Detects
Minimum Concentration
Minimum Detect
Maximum Concentration
Maximum Detect
Average Concentration
Median Concentration
Standard Deviation

EQL
60537182_Agriculture, Parks and Gardens
60537182_Buildings and Structures
60537182_Maintenance of Ecosystems
60537182_Potable Water Supply
60537182_Primary Contact Recreation
60537182_Stock Watering
60537182_Vapour Intrusion

Location	Field ID	Sampled Date Time	Lab Report	Sample Type	SampleCode
Number of Guideline Exceedances					
Number of Guideline Exceedances (Detects Only)					

Env Stds Comments

- #1: ANZECC 2000 LTV
- #2: ANZECC 2000 LTV - Long term trigger value for total nitrogen
- #3: AS2159
- #4: Dutch 1989f
- #5: Dutch 2009 Intervention Value
- #6: ANZECC 2000 Marine 90%
- #7: ANZECC 2000 Low Reliability Value
- #8: ANZECC 2000 Low Reliability Value - Cr(VI) low reliability value
- #9: ANZECC 2000 Marine 90% - Adjusted for average laboratory pH of 7.1
- #10: ANZECC 2000 Marine 90% - 90% grading value from Hickey (2013)
- #11: ADWG 2016 Health
- #12: ADWG 2016 Aesthetic
- #13: USEPA RSLs November 2015
- #14: WHO 2011
- #15: USEPA RSLs November 2015 x10
- #16: ADWG 2016 Health x10
- #17: ADWG 2016 Health - Odour threshold conservatively adopted (converted from 1.5 mg/L ammonia as NH3)
- #18: ADWG 2011 Health
- #19: ANZECC 2000 Stock water
- #20: ANZECC 2000 Stock water - (sheep)
- #21: ADWG 2011 Health - Odour threshold conservatively adopted (converted from 1.5 mg/L ammonia as NH3)
- #22: NEPM 2013 >2-4m, Sand
- #23: WHO 2008 - Drinking-water Quality
- #24: WHO 2008 - Drinking-water Quality x 10
- #25: Department of Health (April 2017), Health Based Guidance Values for PFAS for use in site investigations in Aust
- #26: Department of Health (April 2017), Health Based Guidance Values for PFAS for use in site investigations in Aust
- #27: ANZECC 2000 Freshwater Aquatic Ecosystems 99% Protection

Data Comments

- #1 The LORs have been raised due to matrix interference



Appendix B

Licences and Permits

COPY OF RECORD IN THE VICTORIAN WATER REGISTER

LICENCE TO CONSTRUCT WORKS

under Section 67 of the Water Act 1989

The information in this copy of record is as recorded at the time of printing. Current information should be obtained by a search of the register. The State of Victoria does not warrant the accuracy or completeness of this information and accepts no responsibility for any subsequent release, publication or reproduction of this information.

This licence does not remove the need to apply for any authorisation or permission necessary under any other Act of Parliament with respect to anything authorised by the works licence.

Water used under this licence is not fit for any use that may involve human consumption, directly or indirectly, without first being properly treated.

This licence is not to be interpreted as an endorsement of the design and/or construction of any works (including dams). The Authority does not accept any responsibility or liability for any suits or actions arising from injury, loss, damage or death to person or property which may arise from the maintenance, existence or use of the works.

Each person named as a licence holder is responsible for ensuring all the conditions of this licence are complied with.

This licence authorises its holders to construct the described works, subject to the conditions.

Licence Holder(s)

EPA VICTORIA of GPO BOX 4395 MELBOURNE VIC 3001

Licence Contact Details

EPA VICTORIA

GPO BOX 4395
MELBOURNE VIC 3001

Licence Details

Expiry date	13 Apr 2018
Status	Active
Authority	Southern Rural Water
Name of waterway or aquifer	NA for construct/decommission
Water system	Unincorporated (GMU)

Summary of Licensed Works

The details in this section are a summary only. They are subject to the conditions specified in this licence.

<i>Works ID</i>	<i>Works type</i>	<i>Use of water</i>
WRK100012	Bore	Investigation
WRK100013	Bore	Investigation
WRK100014	Bore	Investigation
WRK100015	Bore	Investigation
WRK100016	Bore	Investigation
WRK100017	Bore	Investigation
WRK100018	Bore	Investigation
WRK100019	Bore	Investigation
WRK100020	Bore	Investigation
WRK100021	Bore	Investigation
WRK100022	Bore	Investigation
WRK100023	Bore	Investigation
WRK100024	Bore	Investigation
WRK100025	Bore	Investigation
WRK100026	Bore	Investigation
WRK100027	Bore	Investigation
WRK100028	Bore	Investigation
WRK100029	Bore	Investigation
WRK100030	Bore	Investigation
WRK100031	Bore	Investigation

Description of Licensed Works

WORKS ID WRK100012

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
315284.045	5810945.590	Zone 55

Land description

Volume 10390 Folio 822
Lot 5 of Plan PS349629C

Description of Licensed Works

WORKS ID WRK100013

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
315320.224	5811124.418	Zone 55

Other land description

78 G7

Property address

Location(s) in or near PORT MELBOURNE, Parish: Melbourne South

Description of Licensed Works

WORKS ID WRK100014

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
315431.001	5810809.699	Zone 55

Land descriptionVolume 10528 Folio 802
Lot S2 of Plan PS433881X**Description of Licensed Works**

WORKS ID WRK100015

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
315449.796	5811006.160	Zone 55

Land descriptionVolume 10866 Folio 135
Lot 1 of Plan PS419726R**Property address**

226 Lorimer St, PORT MELBOURNE, VIC 3207

Description of Licensed Works

WORKS ID WRK100016

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
315475.705	5811150.758	Zone 55

Land description

Volume 10866 Folio 135
Lot 1 of Plan PS419726R

Property address

226 Lorimer St, PORT MELBOURNE, VIC 3207

Description of Licensed Works

WORKS ID WRK100017

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
315465.891	5811328.601	Zone 55

Other land description

78 G7

Property address

Location(s) in or near PORT MELBOURNE, Parish: Melbourne South

Description of Licensed Works

WORKS ID WRK100018

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
315702.543	5810741.499	Zone 55

Land description

Property address

93-125 TODD ROAD PORT MELBOURNE 3207

Description of Licensed Works

WORKS ID WRK100019

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
315689.643	5811063.317	Zone 55

Land descriptionVolume 10866 Folio 135
Lot 1 of Plan PS419726R**Property address**

226 Lorimer St, PORT MELBOURNE, VIC 3207

Description of Licensed Works

WORKS ID WRK100020

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
315684.713	5811293.280	Zone 55

Land descriptionVolume 11150 Folio 015
Lot CM1 of Plan PS611558P**Description of Licensed Works**

WORKS ID WRK100021

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
315668.785	5811523.007	Zone 55

Other land description

78 G7

Property address

Location(s) in or near PORT MELBOURNE, Parish: Melbourne South

Description of Licensed Works

WORKS ID WRK100022

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
315904.753	5810687.817	Zone 55

Land description**Property address**

93-125 TODD ROAD PORT MELBOURNE 3207

Description of Licensed Works

WORKS ID WRK100023

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
315982.418	5810844.527	Zone 55

Land description**Property address**

93-125 TODD ROAD PORT MELBOURNE 3207

Description of Licensed Works

WORKS ID WRK100024

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
316025.900	5811242.576	Zone 55

Other land description

78 G7

Property address

Location(s) in or near PORT MELBOURNE, Parish: Melbourne South

Description of Licensed Works

WORKS ID WRK100025

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
316140.837	5811527.123	Zone 55

Land description

Volume 10876 Folio 028
Lot 18A of Plan PS536636N

Description of Licensed Works

WORKS ID WRK100026

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
316025.669	5811766.726	Zone 55

Other land description

78 G7

Property address

Location(s) in or near PORT MELBOURNE, Parish: Melbourne South

Description of Licensed Works

WORKS ID WRK100027

Works type Bore
Works subtype Drilled bore
Proposed maximum depth 30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
316359.056	5810726.564	Zone 55

Other land description

78 G7

Property address

Location(s) in or near PORT MELBOURNE, Parish: Melbourne South

Description of Licensed Works

WORKS ID WRK100028

Works type Bore
Works subtype Drilled bore
Proposed maximum depth 30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
316360.383	5810944.657	Zone 55

Land description

Property address

1-31 COOK STREET PORT MELBOURNE 3207

Description of Licensed Works

WORKS ID WRK100029

Works type Bore
Works subtype Drilled bore
Proposed maximum depth 30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
316234.241	5811836.215	Zone 55

Other land description

78 G7

Property address

Location(s) in or near PORT MELBOURNE, Parish: Melbourne South

Description of Licensed Works

WORKS ID WRK100030

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
316788.806	5812004.146	Zone 55

Other land description

78 G7

Property address

Location(s) in or near PORT MELBOURNE, Parish: Melbourne South

Description of Licensed Works

WORKS ID WRK100031

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
316484.971	5811945.620	Zone 55

Other land description

78 G7

Property address

Location(s) in or near PORT MELBOURNE, Parish: Melbourne South

Related Instruments

Related entitlements Nil

Related water-use entities Nil

Application History

<i>Reference</i>	<i>Type</i>	<i>Status</i>	<i>Lodged date</i>	<i>Approved date</i>	<i>Recorded date</i>
WLI605960	Issue	Approved	13 Apr 2017	13 Apr 2017	

Conditions

Licence WLE068181 is subject to the following conditions:

Siting and construction

- 1 The bore(s) must be drilled at the location specified in the application approved by the Authority.
- 2 If after drilling the bore is considered unsatisfactory a replacement bore may be drilled on the land specified in the licence.

Preventing pollution

- 3 All earthworks must be carried out, and all drilling fluids and waters produced during construction and development must be disposed of, in ways that avoid contaminating native vegetation, waterways, aquifers, the riparian environment, the riverine environment or other people's property.
- 4 Construction must stop immediately if the Authority reasonably believes that fuel, lubricant, drilling fluid, soil or water produced during construction and development is at risk of being spilled into native vegetation, waterways, aquifers, the riparian environment, the riverine environment or other people's property.
- 5 The licence holder must construct and maintain bund walls, in accordance with the timeframe, specifications, guidelines or standards prescribed by the Authority, to prevent fuel, lubricant, drilling fluid, soil or water produced during construction and development from being spilled into native vegetation, waterways, aquifers, the riparian environment, the riverine environment or other people's property.

Construction standards

- 6 The bore(s) must be constructed, and where relevant decommissioned, in accordance with the Minimum Construction Requirements for Water Bores in Australia, Edition 3 or its successor.

Drilling licence and supervision requirements

- 7 The bore(s) must be constructed by, or under the direct supervision of, a driller licensed under the Water Act 1989 and endorsed as a Class 1, 2, or 3 driller, with appropriate endorsements.
- 8 If artesian pressure is expected or encountered, then a driller licensed under the Water Act 1989, and endorsed as a class 3 driller, must install casing in the bore(s) to a suitable depth, and in a suitable manner, to prevent its outbreak. A suitable valve must also be fitted to the bore.

Bore completion report

- 9 A Bore Completion Report must be submitted to the Authority within 28 working days of the bore(s) being completed.

Protecting water resources

- 10 At the completion of drilling, and before the drilling rig leaves the site, all bore(s) must be decommissioned so as to eliminate physical hazards, conserve aquifer yield, prevent groundwater contamination and prevent the intermingling of desirable and undesirable waters.
- 11 The bore(s) must be located at least 30 metres from any authority's channel, reserve or easement unless authorised by the Authority.

Protecting water quality

- 12 Drilling must not exceed the maximum depth.
- 13 The bore(s) must be constructed so as to prevent aquifer contamination caused by vertical flow outside the casing.
- 14 If two or more aquifers are encountered, the bore(s) must be constructed to ensure that an impervious seal is made and maintained between each aquifer to prevent aquifer connection through vertical flow outside the casing; under no circumstances are two or more aquifers to be screened within the one bore or in any other manner to allow connection between them.
- 15 Boreheads must be constructed, to ensure that no flood water, surface runoff or potential subsurface contaminated soakage can enter the bore or bore annulus.

Fees and charges

- 16 The licence holder must, when requested by the Authority, pay all fees, costs and other charges under the Water Act 1989 in respect of this licence.

END OF COPY OF RECORD

COPY OF RECORD IN THE VICTORIAN WATER REGISTER LICENCE TO CONSTRUCT WORKS

under Section 67 of the Water Act 1989

The information in this copy of record is as recorded at the time of printing. Current information should be obtained by a search of the register. The State of Victoria does not warrant the accuracy or completeness of this information and accepts no responsibility for any subsequent release, publication or reproduction of this information.

This licence does not remove the need to apply for any authorisation or permission necessary under any other Act of Parliament with respect to anything authorised by the works licence.

Water used under this licence is not fit for any use that may involve human consumption, directly or indirectly, without first being properly treated.

This licence is not to be interpreted as an endorsement of the design and/or construction of any works (including dams). The Authority does not accept any responsibility or liability for any suits or actions arising from injury, loss, damage or death to person or property which may arise from the maintenance, existence or use of the works.

Each person named as a licence holder is responsible for ensuring all the conditions of this licence are complied with.

This licence authorises its holders to construct the described works, subject to the conditions.

Licence Holder(s)

EPA VICTORIA of GPO BOX 4395 MELBOURNE VIC 3001

Licence Contact Details

EPA VICTORIA

GPO BOX 4395
MELBOURNE VIC 3001

Licence Details

Expiry date	13 Apr 2018
Status	Active
Authority	Southern Rural Water
Name of waterway or aquifer	NA for construct/decommission
Water system	Unincorporated (GMU)

Summary of Licensed Works

The details in this section are a summary only. They are subject to the conditions specified in this licence.

<i>Works ID</i>	<i>Works type</i>	<i>Use of water</i>
WRK100032	Bore	Investigation
WRK100033	Bore	Investigation
WRK100034	Bore	Investigation
WRK100035	Bore	Investigation
WRK100036	Bore	Investigation
WRK100037	Bore	Investigation
WRK100038	Bore	Investigation
WRK100039	Bore	Investigation
WRK100040	Bore	Investigation
WRK100041	Bore	Investigation
WRK100042	Bore	Investigation
WRK100043	Bore	Investigation
WRK100044	Bore	Investigation
WRK100045	Bore	Investigation
WRK100046	Bore	Investigation
WRK100047	Bore	Investigation
WRK100048	Bore	Investigation
WRK100049	Bore	Investigation
WRK100050	Bore	Investigation
WRK100051	Bore	Investigation

Description of Licensed Works

WORKS ID WRK100032

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317815.140	5811769.066	Zone 55

Land description

Volume 1209 Folio 628K, Volume 9757 Folio 797
CA 12A Section 59 City of Port Melbourne Parish of Melbourne South

Description of Licensed Works

WORKS ID WRK100033

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317834.944	5811918.533	Zone 55

Land description

Volume 1209 Folio 628K, Volume 9757 Folio 797
CA 12A Section 59 City of Port Melbourne Parish of Melbourne South

Description of Licensed Works

WORKS ID WRK100034

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317700.332	5811478.522	Zone 55

Land description

Volume 10920 Folio 825
Lot B of Plan PS529478U

Description of Licensed Works

WORKS ID WRK100035

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317648.662	5811742.491	Zone 55

Land description

Volume 11283 Folio 034
CA 11 Section 59 City of Port Melbourne Parish of Melbourne South

Description of Licensed Works

WORKS ID WRK100036

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317632.607	5811978.215	Zone 55

Land description

Volume 9851 Folio 380
CA 10 Section 59 City of Port Melbourne Parish of Melbourne South

Description of Licensed Works

WORKS ID WRK100037

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317430.277	5811990.885	Zone 55

Land description

Volume 11629 Folio 792
CA 2 Section 59 City of Port Melbourne Parish of Melbourne South

Description of Licensed Works

WORKS ID WRK100038

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317452.345	5811801.303	Zone 55

Land description

Volume 10741 Folio 161
Lot 37 of Plan PS442966N

Description of Licensed Works

WORKS ID WRK100039

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317461.908	5811588.446	Zone 55

Land description

Volume 10139 Folio 031
CA 8A Section 59 City of Port Melbourne Parish of Melbourne South

Description of Licensed Works

WORKS ID WRK100040

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317477.977	5811398.736	Zone 55

Land description

Volume 10594 Folio 150
Lot 2 of Plan PS421793M

Description of Licensed Works

WORKS ID WRK100041

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317204.231	5811289.839	Zone 55

Land description

Volume 9813 Folio 959
CA 3A Section 59 City of Port Melbourne Parish of Melbourne South

Description of Licensed Works

WORKS ID WRK100042

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317233.297	5811520.528	Zone 55

Land description

Volume 9813 Folio 959
CA 3A Section 59 City of Port Melbourne Parish of Melbourne South

Description of Licensed Works

WORKS ID WRK100043

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317228.240	5811756.489	Zone 55

Land description

Volume 9780 Folio 979
Lot 2 of Plan LP201871M

Property address

674-702 Lorimer St, PORT MELBOURNE, VIC 3207

Description of Licensed Works

WORKS ID WRK100044

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
317195.317	5811985.850	Zone 55

Land description

Volume 9780 Folio 979
Lot 2 of Plan LP201871M

Property address

674-702 Lorimer St, PORT MELBOURNE, VIC 3207

Description of Licensed Works

WORKS ID WRK100045

Works type Bore
Works subtype Drilled bore
Proposed maximum depth 30.000 metres

Works location

Easting *Northing* *Zone MGA*
316976.354 5811981.157 Zone 55

Land description

Volume 9959 Folio 666
Lot 21 of Plan PS300001C

Description of Licensed Works

WORKS ID WRK100046

Works type Bore
Works subtype Drilled bore
Proposed maximum depth 30.000 metres

Works location

Easting *Northing* *Zone MGA*
316969.555 5811784.955 Zone 55

Land description

Volume 10914 Folio 545
Lot 2 of Plan PS517280K

Property address

241 Salmon St, Port Melbourne, 3207

Description of Licensed Works

WORKS ID WRK100047

Works type Bore
Works subtype Drilled bore
Proposed maximum depth 30.000 metres

Works location

Easting *Northing* *Zone MGA*
316997.715 5811544.488 Zone 55

Land description

Volume 10916 Folio 698
Lot 1 of Plan PS539198U

Description of Licensed Works

WORKS ID WRK100048

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
316990.410	5811325.268	Zone 55

Land description

Volume 10042 Folio 913
CA 6 Section 58 City of Port Melbourne Parish of Melbourne South

Property address

157 Salmon St, PORT MELBOURNE, VIC 3207

Description of Licensed Works

WORKS ID WRK100049

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
316907.618	5811174.450	Zone 55

Other land description

78 G7

Property address

Location(s) in or near PORT MELBOURNE, Parish: Melbourne South

Description of Licensed Works

WORKS ID WRK100050

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
316827.595	5811407.803	Zone 55

Land description

Volume 10275 Folio 388

CA 5B Section 58 City of Port Melbourne Parish of Melbourne South

Description of Licensed Works

WORKS ID WRK100051

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	30.000 metres

Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
316707.388	5811089.135	Zone 55

Other land description

78 G7

Property address

Location(s) in or near PORT MELBOURNE, Parish: Melbourne South

Related Instruments**Related entitlements** Nil**Related water-use entities** Nil**Application History**

<i>Reference</i>	<i>Type</i>	<i>Status</i>	<i>Lodged date</i>	<i>Approved date</i>	<i>Recorded date</i>
WLI605961	Issue	Approved	13 Apr 2017	13 Apr 2017	

Conditions

Licence WLE068182 is subject to the following conditions:

Siting and construction

- 1 The bore(s) must be drilled at the location specified in the application approved by the Authority.
- 2 If after drilling the bore is considered unsatisfactory a replacement bore may be drilled on the land specified in the licence.

Preventing pollution

- 3 All earthworks must be carried out, and all drilling fluids and waters produced during construction and development must be disposed of, in ways that avoid contaminating native vegetation, waterways, aquifers, the riparian environment, the riverine environment or other people's property.
- 4 Construction must stop immediately if the Authority reasonably believes that fuel, lubricant, drilling fluid, soil or water produced during construction and development is at risk of being spilled into native vegetation, waterways, aquifers, the riparian environment, the riverine environment or other people's property.
- 5 The licence holder must construct and maintain bund walls, in accordance with the timeframe, specifications, guidelines or standards prescribed by the Authority, to prevent fuel, lubricant, drilling fluid, soil or water produced during construction and development from being spilled into native vegetation, waterways, aquifers, the riparian environment, the riverine environment or other people's property.

Construction standards

- 6 The bore(s) must be constructed, and where relevant decommissioned, in accordance with the Minimum Construction Requirements for Water Bores in Australia, Edition 3 or its successor.

Drilling licence and supervision requirements

- 7 The bore(s) must be constructed by, or under the direct supervision of, a driller licensed under the Water Act 1989 and endorsed as a Class 1, 2, or 3 driller, with appropriate endorsements.
- 8 If artesian pressure is expected or encountered, then a driller licensed under the Water Act 1989, and endorsed as a class 3 driller, must install casing in the bore(s) to a suitable depth, and in a suitable manner, to prevent its outbreak. A suitable valve must also be fitted to the bore.

Bore completion report

- 9 A Bore Completion Report must be submitted to the Authority within 28 working days of the bore(s) being completed.

Protecting water resources

- 10 At the completion of drilling, and before the drilling rig leaves the site, all bore(s) must be decommissioned so as to eliminate physical hazards, conserve aquifer yield, prevent groundwater contamination and prevent the intermingling of desirable and undesirable waters.
- 11 The bore(s) must be located at least 30 metres from any authority's channel, reserve or easement unless authorised by the Authority.

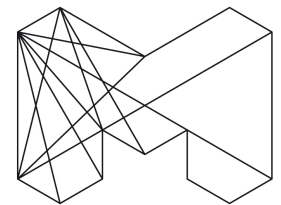
Protecting water quality

- 12 Drilling must not exceed the maximum depth.
- 13 The bore(s) must be constructed so as to prevent aquifer contamination caused by vertical flow outside the casing.
- 14 If two or more aquifers are encountered, the bore(s) must be constructed to ensure that an impervious seal is made and maintained between each aquifer to prevent aquifer connection through vertical flow outside the casing; under no circumstances are two or more aquifers to be screened within the one bore or in any other manner to allow connection between them.
- 15 Boreheads must be constructed, to ensure that no flood water, surface runoff or potential subsurface contaminated soakage can enter the bore or bore annulus.

Fees and charges

- 16 The licence holder must, when requested by the Authority, pay all fees, costs and other charges under the Water Act 1989 in respect of this licence.

END OF COPY OF RECORD



CITY OF MELBOURNE

GPO Box 1603

Melbourne VIC 3001

ABN 55 370 219 287
Hotline (03) 9658 9658

Facsimile (03) 9654 4854

DX210487

ABN 55 370 219 287

CONSENT FOR WORKS

Road Management Act 2004

Road Management (Works and Infrastructure) Regulations 2005

Construction Management Group
3rd Floor 240 Little Collins Street
Melbourne Vic 3000

Telephone: 03 9658 9658
After Hours: 03 9658 9774

Consent Number: CW-2017-1688

Attention:

Consent is given for the proposed works subject to the attached general and specific conditions.

Council conditions must be adhered to prior to and/or during proposed works. Failure to comply with Council conditions and requirements of the Road Management (Works and Infrastructure) Regulations 2015 will result in this consent being revoked.

Any alterations to this consent will make it null and void.

Property Address:	Melbourne International Karting Complex, 1-31 Cook Street, PORT MELBOURNE VIC 3207
Applicant:	Aecom Australia Pty Ltd
Address of Applicant:	Level 10, Collins Square Tower 2, 727 Collins St, DOCKLANDS VIC 3008
Contact Details:	Averyll Coyne - 0499 252 502
Description of Work:	<p>Consent for works issued at Cook Street to assist with temporary vehicle crossing at the subject site. Date: 3 April - 31 May 2017 (Monday to Friday 7am to 7pm) (Saturday 8am to 3pm) Council ESG Reference: SR# 3599381 Full traffic management is required to direct pedestrians to a safe route of passage. The site is to be signed and managed in accordance with AS 1742.3 and Vic Roads Worksite Code of Practice. It is the responsibility of the applicant to ensure that all Council assets are reinstated in accordance with Councils current standards and specifications. No-one is to be denied vehicular or pedestrian access to their property. It is the responsibility of the applicant to apply for and obtain TSA reserved parking permits should the occupation of parking bays be required.</p>

Fees/Charges:

The following fees/charges apply to this consent:

Consent for Works Fee	\$170.50
-----------------------	----------

Signature of Delegated Officer: *James Valentine* Date: 4 Apr 2017
James Valentine

The holder of the consent must comply with the following conditions:

1. The consent holder ("Applicant") is responsible for ensuring the works are carried out in a safe manner, in compliance with these conditions and in accordance with the City of Melbourne Activities Local Law 2009.
2. The consent is not transferable. It must be held on site by the person in charge of the work and be produced on request by an authorised officer or a member of the Victoria Police Force. The consent holder must comply promptly with any notices and instructions.
3. Any variation required to a consent must be submitted to the Council or delegate for endorsement. Change/variation of work must not commence prior to relevant approval being granted in writing by the Council or delegate.
4. Vehicles must not cross any footpath to gain access to the site of the work or project unless vehicular crossing (either temporary or permanent) has been constructed to the approval of the Council or delegate or authorised officer.
5. Every stormwater channel adjacent to the site of work or project will be kept clear of obstruction at all times.
6. Rubbish or building materials must not be left in or on any road or public place.
7. Building materials spilt on to the roadway or the footpath must be removed immediately. Equipment used for transporting or handling building materials must not be washed in or on any road or public place or into any drain. Hoses must not be used for these purposes in or on a road or footpath.
8. Barricades must consist, unless alternative arrangements are approved, of minimum 1 metre height timber or steel rails on stable supporting posts at maximum 4.8 metre centres, continuous around the entire working area. Warning signage must be erected at each end of the barricaded area with the appropriate standard 'Detour', 'Road Closed', arrow etc.
9. Appropriate warning signage and lighting must be erected in accordance with AS1742.3.
10. Any occupation of space within the street environment must not hinder disabled facilities, carparks or access.
11. In regards to any areas or works that require the implementation of public protection, the Relevant Building Surveyor must assess all public protection structures.
12. Any area closed between sunset and sunrise shall be fitted with battery operated flashing lights in accordance with the Council's plans.
13. Unless otherwise stated, this consent must comply with the City of Melbourne's Code of Good Practice for Public Safety and Amenity at Construction Sites.
14. Safe and equitable pedestrian access is required at all times. Pedestrian ramps must be installed where necessary.
15. This consent does not exclude the consent holder from the City of Melbourne's Local Laws or the relevant parking laws.
16. The scheduled works are to be undertaken during the hours stated in this consent, or in a relevant Out of Hours consent.
 - 1) This permit relates to the surface opening of any road within the City of Melbourne and the specific use thereof of any part of a road and reinstatement or reconstruction of any road.
 - 2) When the abovementioned work has been completed, notice thereof must be given to the Council, delegate or authorised officer.
 - 3) Wood blocks, flagging, pitchers, bluestone kerbing or other material required to be replaced must be taken from the site to a location designated by the Council, delegate or authorised officer.
 - 4) The permit holder must ensure that all excavation work is clear of services and is responsible and liable for any damage or alterations to services and any related costs.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

5) All private service connections, ie water, gas, power or other property services must be placed at least 450mm clear depth below surface level or in accordance with the requirements of the Supply Authority and installed at right angles to the building line.

6) Boundary trap and disconnected trap covers which cannot be placed inside the building line must be placed 300mm below the surface of the pavement within 230mm of the building line. No other fittings may be placed in the pavement without the consent of the Council, delegate or authorised officer.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

The holder of the consent must comply with the following conditions:

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9. Appropriate warning signage and lighting must be erected in accordance with AS1742.3.
10. Any occupation of space within the street environment must not hinder disabled facilities, carparks or access.
11. In regards to any areas or works that require the implementation of public protection, the Relevant Building Surveyor must assess all public protection structures.
12. Any area closed between sunset and sunrise shall be fitted with battery operated flashing lights in accordance with the Council's plans.
13. Unless otherwise stated, this consent must comply with the City of Melbourne's Code of Good Practice for Public Safety and Amenity at Construction Sites.
14. Safe and equitable pedestrian access is required at all times. Pedestrian ramps must be installed where necessary.
15. This consent does not exclude the consent holder from the City of Melbourne's Local Laws or the relevant parking laws.
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 - 1) This permit relates to the surface opening of any road within the City of Melbourne and the specific use thereof of any part of a road and reinstatement or reconstruction of any road.
 - 2) When the abovementioned work has been completed, notice thereof must be given to the Council, delegate or authorised officer.
 - 3) Wood blocks, flagging, pitchers, bluestone kerbing or other material required to be replaced must be taken from the site to a location designated by the Council, delegate or authorised officer.
 - 4) The permit holder must ensure that all excavation work is clear of services and is responsible and liable for any damage or alterations to services and any related costs.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

5) All private service connections, ie water, gas, power or other property services must be placed at least 450mm clear depth below surface level or in accordance with the requirements of the Supply Authority and installed at right angles to the building line.

6) Boundary trap and disconnected trap covers which cannot be placed inside the building line must be placed 300mm below the surface of the pavement within 230mm of the building line. No other fittings may be placed in the pavement without the consent of the Council, delegate or authorised officer.

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12. Any area closed between sunset and sunrise shall be fitted with battery operated flashing lights in accordance with the Council's plans.
13. Unless otherwise stated, this consent must comply with the City of Melbourne's Code of Good Practice for Public Safety and Amenity at Construction Sites.
14. Safe and equitable pedestrian access is required at all times. Pedestrian ramps must be installed where necessary.
15. This consent does not exclude the consent holder from the City of Melbourne's Local Laws or the relevant parking laws.
16. The scheduled works are to be undertaken during the hours stated in this consent, or in a relevant Out of Hours consent.
 - 1) This permit relates to the surface opening of any road within the City of Melbourne and the specific use thereof of any part of a road and reinstatement or reconstruction of any road.
 - 2) When the abovementioned work has been completed, notice thereof must be given to the Council, delegate or authorised officer.
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 - 4) The permit holder must ensure that all excavation work is clear of services and is responsible and liable for any damage or alterations to services and any related costs.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

5) All private service connections, ie water, gas, power or other property services must be placed at least 450mm clear depth below surface level or in accordance with the requirements of the Supply Authority and installed at right angles to the building line.

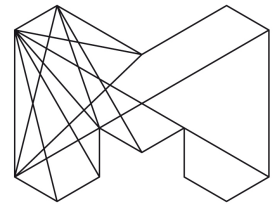
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CONSENT FOR WORKS

Road Management Act 2004

Road Management (Works and Infrastructure) Regulations 2005



CITY OF MELBOURNE

GPO Box 1603

Melbourne VIC 3001

ABN 55 370 219 287
Hotline (03) 9658 9658

Facsimile (03) 9654 4854

DX210487

ABN 55 370 219 287

Construction Management Group
3rd Floor 240 Little Collins Street
Melbourne Vic 3000

Telephone: 03 9658 9658
After Hours: 03 9658 9774

Consent Number: CW-2017-2075

Attention:

Consent is given for the proposed works subject to the attached general and specific conditions.

Council conditions must be adhered to prior to and/or during proposed works. Failure to comply with Council conditions and requirements of the Road Management (Works and Infrastructure) Regulations 2015 will result in this consent being revoked.

Any alterations to this consent will make it null and void.

Property Address:	Hall Street, PORT MELBOURNE
Applicant:	Aecom Australia Pty Ltd
Address of Applicant:	Level 9, 8 Exhibition St, MELBOURNE VIC 3000
Contact Details:	Averyll - 9653 1234
Description of Work:	<p>Consent for works issued at Hall Street to assist with temporary vehicle crossing at the subject site. Date: 11 April 2017 to 31 May 2017 (Monday to Friday 7am to 7pm) (Saturday 8am to 3pm)</p> <p>Council ESG Reference: SR# 3605938 Full traffic management is required to direct pedestrians to a safe route of passage. The site is to be signed and managed in accordance with AS 1742.3 and Vic Roads Worksite Code of Practice. It is the responsibility of the applicant to ensure that all Council assets are reinstated in accordance with Councils current standards and specifications. No-one is to be denied vehicular or pedestrian access to their property. It is the responsibility of the applicant to apply for and obtain TSA reserved parking permits should the occupation of parking bays be required.</p>

Date(s) permitted:

From: 11 Apr 2017

To: 31 May 2017

Fees/Charges:

The following fees/charges apply to this consent:

Consent for Works Fee

\$170.50

Signature of Delegated Officer:  Date: 13 Apr 2017

Jenny WATERSTONE

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

The holder of the consent must comply with the following conditions:

1. The consent holder ("Applicant") is responsible for ensuring the works are carried out in a safe manner, in compliance with these conditions and in accordance with the City of Melbourne Activities Local Law 2009.
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9. Appropriate warning signage and lighting must be erected in accordance with AS1742.3.
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12. Any area closed between sunset and sunrise shall be fitted with battery operated flashing lights in accordance with the Council's plans.
13. Unless otherwise stated, this consent must comply with the City of Melbourne's Code of Good Practice for Public Safety and Amenity at Construction Sites.
14. Safe and equitable pedestrian access is required at all times. Pedestrian ramps must be installed where necessary.
15. This consent does not exclude the consent holder from the City of Melbourne's Local Laws or the relevant parking laws.
16. The scheduled works are to be undertaken during the hours stated in this consent, or in a relevant Out of Hours consent.
 - 1) This permit relates to the surface opening of any road within the City of Melbourne and the specific use thereof of any part of a road and reinstatement or reconstruction of any road.
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NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

5) All private service connections, ie water, gas, power or other property services must be placed at least 450mm clear depth below surface level or in accordance with the requirements of the Supply Authority and installed at right angles to the building line.

6) Boundary trap and disconnected trap covers which cannot be placed inside the building line must be placed 300mm below the surface of the pavement within 230mm of the building line. No other fittings may be placed in the pavement without the consent of the Council, delegate or authorised officer.

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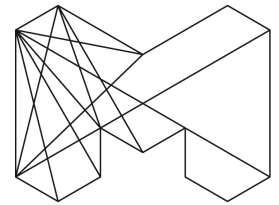
CONSENT FOR WORKS

Road Management Act 2004

Road Management (Works and Infrastructure) Regulations 2005

Construction Management Group
3rd Floor 240 Little Collins Street
Melbourne Vic 3000

Telephone: 03 9658 9658
After Hours: 03 9658 9774



CITY OF MELBOURNE

GPO Box 1603
Melbourne VIC 3001
ABN 55 370 219 287
Hotline (03) 9658 9658
Facsimile (03) 9654 4854
DX210487
ABN 55 370 219 287

Consent Number: CW-2017-1737

Attention:

Consent is given for the proposed works subject to the attached general and specific conditions.

Council conditions must be adhered to prior to and/or during proposed works. Failure to comply with Council conditions and requirements of the Road Management (Works and Infrastructure) Regulations 2015 will result in this consent being revoked.

Any alterations to this consent will make it null and void.

Property Address:	Turner Street, PORT MELBOURNE VIC 3027
Location (if different from property address)	Turner Street, PORT MELBOURNE VIC 3027
Applicant:	Aecom Australia Pty Ltd
Address of Applicant:	Level 10, Collins Square Tower 2, 727 Collins St, DOCKLANDS VIC 3008
Contact Details:	Averyll Coyne - 0499 252 502
Description of Work:	Consent for works issued at Turner Street to assist with temporary vehicle crossing at the subject site. Date: 3 April - 31 May 2017 (Monday to Friday 7am to 7pm) (Saturday 8am to 3pm) Council ESG Reference: SR# 3599435 Full traffic management is required to direct pedestrians to a safe route of passage. The site is to be signed and managed in accordance with AS 1742.3 and Vic Roads Worksite Code of Practice. It is the responsibility of the applicant to ensure that all Council assets are reinstated in accordance with Councils current standards and specifications. No-one is to be denied vehicular or pedestrian access to their property. It is the responsibility of the applicant to apply for and obtain TSA reserved parking permits should the occupation of parking bays be required.

Fees/Charges:

The following fees/charges apply to this consent:

Consent for Works Fee \$170.50

Signature of Delegated Officer: *James Valentine* Date: 4 Apr 2017

James Valentine

The holder of the consent must comply with the following conditions:

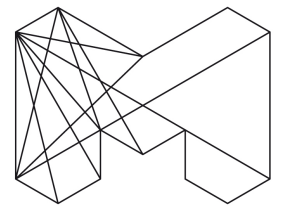
1. The consent holder ("Applicant") is responsible for ensuring the works are carried out in a safe manner, in compliance with these conditions and in accordance with the City of Melbourne Activities Local Law 2009.
2. The consent is not transferable. It must be held on site by the person in charge of the work and be produced on request by an authorised officer or a member of the Victoria Police Force. The consent holder must comply promptly with any notices and instructions.
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CITY OF MELBOURNE

GPO Box 1603

Melbourne VIC 3001

ABN 55 370 219 287
Hotline (03) 9658 9658

Facsimile (03) 9654 4854

DX210487

ABN 55 370 219 287

CONSENT FOR WORKS

Road Management Act 2004

Road Management (Works and Infrastructure) Regulations 2005

Construction Management Group
3rd Floor 240 Little Collins Street
Melbourne Vic 3000

Telephone: 03 9658 9658
After Hours: 03 9658 9774

Consent Number: CW-2017-1736

Attention:

Consent is given for the proposed works subject to the attached general and specific conditions.

Council conditions must be adhered to prior to and/or during proposed works. Failure to comply with Council conditions and requirements of the Road Management (Works and Infrastructure) Regulations 2015 will result in this consent being revoked.

Any alterations to this consent will make it null and void.

Property Address:	Douglas Street, PORT MELBOURNE VIC 3207
Location (if different from property address)	Douglas Street, PORT MELBOURNE VIC 3207
Applicant:	Aecom Australia Pty Ltd
Address of Applicant:	Level 10, Collins Square Tower 2, 727 Collins St, DOCKLANDS VIC 3008
Contact Details:	Averyll Coyne - 0499 252 502
Description of Work:	<p>Consent for works issued at Douglas Street to assist with temporary vehicle crossing at the subject site. Date: 3 April - 31 May 2017 (Monday to Friday 7am to 7pm) (Saturday 8am to 3pm) Council ESG Reference: SR# 3599435 Full traffic management is required to direct pedestrians to a safe route of passage. The site is to be signed and managed in accordance with AS 1742.3 and Vic Roads Worksite Code of Practice. It is the responsibility of the applicant to ensure that all Council assets are reinstated in accordance with Councils current standards and specifications. No-one is to be denied vehicular or pedestrian access to their property. It is the responsibility of the applicant to apply for and obtain TSA reserved parking permits should the occupation of parking bays be required.</p>

Fees/Charges:

The following fees/charges apply to this consent:

Consent for Works Fee	\$170.50
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Signature of Delegated Officer: *James Valentine* Date: 4 Apr 2017
James Valentine

The holder of the consent must comply with the following conditions:

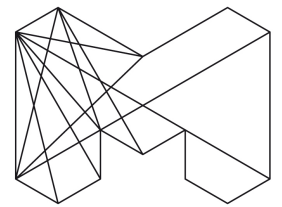
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5. Every stormwater channel adjacent to the site of work or project will be kept clear of obstruction at all times.
6. Rubbish or building materials must not be left in or on any road or public place.
7. Building materials spilt on to the roadway or the footpath must be removed immediately. Equipment used for transporting or handling building materials must not be washed in or on any road or public place or into any drain. Hoses must not be used for these purposes in or on a road or footpath.
8. Barricades must consist, unless alternative arrangements are approved, of minimum 1 metre height timber or steel rails on stable supporting posts at maximum 4.8 metre centres, continuous around the entire working area. Warning signage must be erected at each end of the barricaded area with the appropriate standard 'Detour', 'Road Closed', arrow etc.
9. Appropriate warning signage and lighting must be erected in accordance with AS1742.3.
10. Any occupation of space within the street environment must not hinder disabled facilities, carparks or access.
11. In regards to any areas or works that require the implementation of public protection, the Relevant Building Surveyor must assess all public protection structures.
12. Any area closed between sunset and sunrise shall be fitted with battery operated flashing lights in accordance with the Council's plans.
13. Unless otherwise stated, this consent must comply with the City of Melbourne's Code of Good Practice for Public Safety and Amenity at Construction Sites.
14. Safe and equitable pedestrian access is required at all times. Pedestrian ramps must be installed where necessary.
15. This consent does not exclude the consent holder from the City of Melbourne's Local Laws or the relevant parking laws.
16. The scheduled works are to be undertaken during the hours stated in this consent, or in a relevant Out of Hours consent.
 - 1) This permit relates to the surface opening of any road within the City of Melbourne and the specific use thereof of any part of a road and reinstatement or reconstruction of any road.
 - 2) When the abovementioned work has been completed, notice thereof must be given to the Council, delegate or authorised officer.
 - 3) Wood blocks, flagging, pitchers, bluestone kerbing or other material required to be replaced must be taken from the site to a location designated by the Council, delegate or authorised officer.
 - 4) The permit holder must ensure that all excavation work is clear of services and is responsible and liable for any damage or alterations to services and any related costs.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

5) All private service connections, ie water, gas, power or other property services must be placed at least 450mm clear depth below surface level or in accordance with the requirements of the Supply Authority and installed at right angles to the building line.

6) Boundary trap and disconnected trap covers which cannot be placed inside the building line must be placed 300mm below the surface of the pavement within 230mm of the building line. No other fittings may be placed in the pavement without the consent of the Council, delegate or authorised officer.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.



CITY OF MELBOURNE

GPO Box 1603

Melbourne VIC 3001

ABN 55 370 219 287
Hotline (03) 9658 9658

Facsimile (03) 9654 4854

DX210487

ABN 55 370 219 287

CONSENT FOR WORKS

Road Management Act 2004

Road Management (Works and Infrastructure) Regulations 2005

Construction Management Group
3rd Floor 240 Little Collins Street
Melbourne Vic 3000

Telephone: 03 9658 9658
After Hours: 03 9658 9774

Consent Number: CW-2017-1735

Attention:

Consent is given for the proposed works subject to the attached general and specific conditions.

Council conditions must be adhered to prior to and/or during proposed works. Failure to comply with Council conditions and requirements of the Road Management (Works and Infrastructure) Regulations 2015 will result in this consent being revoked.

Any alterations to this consent will make it null and void.

Property Address:	Cook Street, PORT MELBOURNE VIC 3207
Location (if different from property address)	Cook Street, PORT MELBOURNE VIC 3207
Applicant:	Aecom Australia Pty Ltd
Address of Applicant:	Level 10, Collins Square Tower 2, 727 Collins St, DOCKLANDS VIC 3008
Contact Details:	Averyll Coyne - 0499 252 502
Description of Work:	Consent for works issued at Cook Street to assist with temporary vehicle crossing at the subject site. Date: 3 April - 31 May 2017 (Monday to Friday 7am to 7pm) (Saturday 8am to 3pm) Council ESG Reference: SR# 3599435 Full traffic management is required to direct pedestrians to a safe route of passage. The site is to be signed and managed in accordance with AS 1742.3 and Vic Roads Worksite Code of Practice. It is the responsibility of the applicant to ensure that all Council assets are reinstated in accordance with Councils current standards and specifications. No-one is to be denied vehicular or pedestrian access to their property. It is the responsibility of the applicant to apply for and obtain TSA reserved parking permits should the occupation of parking bays be required.

Fees/Charges:

The following fees/charges apply to this consent:

Consent for Works Fee	\$170.50
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Signature of Delegated Officer: *James Valentine* Date: 4 Apr 2017

James Valentine

The holder of the consent must comply with the following conditions:

1. The consent holder ("Applicant") is responsible for ensuring the works are carried out in a safe manner, in compliance with these conditions and in accordance with the City of Melbourne Activities Local Law 2009.
2. The consent is not transferable. It must be held on site by the person in charge of the work and be produced on request by an authorised officer or a member of the Victoria Police Force. The consent holder must comply promptly with any notices and instructions.
3. Any variation required to a consent must be submitted to the Council or delegate for endorsement. Change/variation of work must not commence prior to relevant approval being granted in writing by the Council or delegate.
4. Vehicles must not cross any footpath to gain access to the site of the work or project unless vehicular crossing (either temporary or permanent) has been constructed to the approval of the Council or delegate or authorised officer.
5. Every stormwater channel adjacent to the site of work or project will be kept clear of obstruction at all times.
6. Rubbish or building materials must not be left in or on any road or public place.
7. Building materials spilt on to the roadway or the footpath must be removed immediately. Equipment used for transporting or handling building materials must not be washed in or on any road or public place or into any drain. Hoses must not be used for these purposes in or on a road or footpath.
8. Barricades must consist, unless alternative arrangements are approved, of minimum 1 metre height timber or steel rails on stable supporting posts at maximum 4.8 metre centres, continuous around the entire working area. Warning signage must be erected at each end of the barricaded area with the appropriate standard 'Detour', 'Road Closed', arrow etc.
9. Appropriate warning signage and lighting must be erected in accordance with AS1742.3.
10. Any occupation of space within the street environment must not hinder disabled facilities, carparks or access.
11. In regards to any areas or works that require the implementation of public protection, the Relevant Building Surveyor must assess all public protection structures.
12. Any area closed between sunset and sunrise shall be fitted with battery operated flashing lights in accordance with the Council's plans.
13. Unless otherwise stated, this consent must comply with the City of Melbourne's Code of Good Practice for Public Safety and Amenity at Construction Sites.
14. Safe and equitable pedestrian access is required at all times. Pedestrian ramps must be installed where necessary.
15. This consent does not exclude the consent holder from the City of Melbourne's Local Laws or the relevant parking laws.
16. The scheduled works are to be undertaken during the hours stated in this consent, or in a relevant Out of Hours consent.
 - 1) This permit relates to the surface opening of any road within the City of Melbourne and the specific use thereof of any part of a road and reinstatement or reconstruction of any road.
 - 2) When the abovementioned work has been completed, notice thereof must be given to the Council, delegate or authorised officer.
 - 3) Wood blocks, flagging, pitchers, bluestone kerbing or other material required to be replaced must be taken from the site to a location designated by the Council, delegate or authorised officer.
 - 4) The permit holder must ensure that all excavation work is clear of services and is responsible and liable for any damage or alterations to services and any related costs.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

5) All private service connections, ie water, gas, power or other property services must be placed at least 450mm clear depth below surface level or in accordance with the requirements of the Supply Authority and installed at right angles to the building line.

6) Boundary trap and disconnected trap covers which cannot be placed inside the building line must be placed 300mm below the surface of the pavement within 230mm of the building line. No other fittings may be placed in the pavement without the consent of the Council, delegate or authorised officer.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

The holder of the consent must comply with the following conditions:

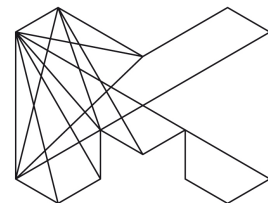
1. The consent holder ("Applicant") is responsible for ensuring the works are carried out in a safe manner, in compliance with these conditions and in accordance with the City of Melbourne Activities Local Law 2009.
2. The consent is not transferable. It must be held on site by the person in charge of the work and be produced on request by an authorised officer or a member of the Victoria Police Force. The consent holder must comply promptly with any notices and instructions.
3. Any variation required to a consent must be submitted to the Council or delegate for endorsement. Change/variation of work must not commence prior to relevant approval being granted in writing by the Council or delegate.
4. Vehicles must not cross any footpath to gain access to the site of the work or project unless vehicular crossing (either temporary or permanent) has been constructed to the approval of the Council or delegate or authorised officer.
5. Every stormwater channel adjacent to the site of work or project will be kept clear of obstruction at all times.
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7. Building materials spilt on to the roadway or the footpath must be removed immediately. Equipment used for transporting or handling building materials must not be washed in or on any road or public place or into any drain. Hoses must not be used for these purposes in or on a road or footpath.
8. Barricades must consist, unless alternative arrangements are approved, of minimum 1 metre height timber or steel rails on stable supporting posts at maximum 4.8 metre centres, continuous around the entire working area. Warning signage must be erected at each end of the barricaded area with the appropriate standard 'Detour', 'Road Closed', arrow etc.
9. Appropriate warning signage and lighting must be erected in accordance with AS1742.3.
10. Any occupation of space within the street environment must not hinder disabled facilities, carparks or access.
11. In regards to any areas or works that require the implementation of public protection, the Relevant Building Surveyor must assess all public protection structures.
12. Any area closed between sunset and sunrise shall be fitted with battery operated flashing lights in accordance with the Council's plans.
13. Unless otherwise stated, this consent must comply with the City of Melbourne's Code of Good Practice for Public Safety and Amenity at Construction Sites.
14. Safe and equitable pedestrian access is required at all times. Pedestrian ramps must be installed where necessary.
15. This consent does not exclude the consent holder from the City of Melbourne's Local Laws or the relevant parking laws.
16. The scheduled works are to be undertaken during the hours stated in this consent, or in a relevant Out of Hours consent.
 - 1) This permit relates to the surface opening of any road within the City of Melbourne and the specific use thereof of any part of a road and reinstatement or reconstruction of any road.
 - 2) When the abovementioned work has been completed, notice thereof must be given to the Council, delegate or authorised officer.
 - 3) Wood blocks, flagging, pitchers, bluestone kerbing or other material required to be replaced must be taken from the site to a location designated by the Council, delegate or authorised officer.
 - 4) The permit holder must ensure that all excavation work is clear of services and is responsible and liable for any damage or alterations to services and any related costs.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

5) All private service connections, ie water, gas, power or other property services must be placed at least 450mm clear depth below surface level or in accordance with the requirements of the Supply Authority and installed at right angles to the building line.

6) Boundary trap and disconnected trap covers which cannot be placed inside the building line must be placed 300mm below the surface of the pavement within 230mm of the building line. No other fittings may be placed in the pavement without the consent of the Council, delegate or authorised officer.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.



CITY OF MELBOURNE

GPO Box 1603

Melbourne VIC 3001

ABN 55 370 219 287
Hotline (03) 9658 9658

Facsimile (03) 9654 4854

DX210487

ABN 55 370 219 287

CONSENT FOR WORKS

Road Management Act 2004

Road Management (Works and Infrastructure) Regulations 2005

Construction Management Group
3rd Floor 240 Little Collins Street
Melbourne Vic 3000

Telephone: 03 9658 9658
After Hours: 03 9658 9774

Consent Number: CW-2017-1961

Attention:

Consent is given for the proposed works subject to the attached general and specific conditions.

Council conditions must be adhered to prior to and/or during proposed works. Failure to comply with Council conditions and requirements of the Road Management (Works and Infrastructure) Regulations 2015 will result in this consent being revoked.

Any alterations to this consent will make it null and void.

Property Address:	Lorimer Street, PORT MELBOURNE
Applicant:	Aecom Australia Pty Ltd
Address of Applicant:	Level 10, Collins Square Tower 2, 727 Collins St, DOCKLANDS VIC 3008
Contact Details:	Averyll - 0499 252 502
Description of Work:	Consent for works issued at Lorimer Street to assist with temporary vehicle crossing at the subject site. Date: 11 April 2017 to 31 May 2017 (Monday to Friday 7am to 7pm) (Saturday 8am to 3pm) Council ESG Reference: SR# 3605938 Full traffic management is required to direct pedestrians to a safe route of passage. The site is to be signed and managed in accordance with AS 1742.3 and Vic Roads Worksite Code of Practice. It is the responsibility of the applicant to ensure that all Council assets are reinstated in accordance with Councils current standards and specifications. No-one is to be denied vehicular or pedestrian access to their property. It is the responsibility of the applicant to apply for and obtain TSA reserved parking permits should the occupation of parking bays be required.

Fees/Charges:

The following fees/charges apply to this consent:

Consent for Works Fee	\$170.50
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Signature of Delegated Officer: *Kimberley Cole* Date: 11 Apr 2017

Kimberley Cole

The holder of the consent must comply with the following conditions:

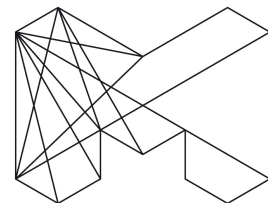
1. The consent holder ("Applicant") is responsible for ensuring the works are carried out in a safe manner, in compliance with these conditions and in accordance with the City of Melbourne Activities Local Law 2009.
2. The consent is not transferable. It must be held on site by the person in charge of the work and be produced on request by an authorised officer or a member of the Victoria Police Force. The consent holder must comply promptly with any notices and instructions.
3. Any variation required to a consent must be submitted to the Council or delegate for endorsement. Change/variation of work must not commence prior to relevant approval being granted in writing by the Council or delegate.
4. Vehicles must not cross any footpath to gain access to the site of the work or project unless vehicular crossing (either temporary or permanent) has been constructed to the approval of the Council or delegate or authorised officer.
5. Every stormwater channel adjacent to the site of work or project will be kept clear of obstruction at all times.
6. Rubbish or building materials must not be left in or on any road or public place.
7. Building materials spilt on to the roadway or the footpath must be removed immediately. Equipment used for transporting or handling building materials must not be washed in or on any road or public place or into any drain. Hoses must not be used for these purposes in or on a road or footpath.
8. Barricades must consist, unless alternative arrangements are approved, of minimum 1 metre height timber or steel rails on stable supporting posts at maximum 4.8 metre centres, continuous around the entire working area. Warning signage must be erected at each end of the barricaded area with the appropriate standard 'Detour', 'Road Closed', arrow etc.
9. Appropriate warning signage and lighting must be erected in accordance with AS1742.3.
10. Any occupation of space within the street environment must not hinder disabled facilities, carparks or access.
11. In regards to any areas or works that require the implementation of public protection, the Relevant Building Surveyor must assess all public protection structures.
12. Any area closed between sunset and sunrise shall be fitted with battery operated flashing lights in accordance with the Council's plans.
13. Unless otherwise stated, this consent must comply with the City of Melbourne's Code of Good Practice for Public Safety and Amenity at Construction Sites.
14. Safe and equitable pedestrian access is required at all times. Pedestrian ramps must be installed where necessary.
15. This consent does not exclude the consent holder from the City of Melbourne's Local Laws or the relevant parking laws.
16. The scheduled works are to be undertaken during the hours stated in this consent, or in a relevant Out of Hours consent.
 - 1) This permit relates to the surface opening of any road within the City of Melbourne and the specific use thereof of any part of a road and reinstatement or reconstruction of any road.
 - 2) When the abovementioned work has been completed, notice thereof must be given to the Council, delegate or authorised officer.
 - 3) Wood blocks, flagging, pitchers, bluestone kerbing or other material required to be replaced must be taken from the site to a location designated by the Council, delegate or authorised officer.
 - 4) The permit holder must ensure that all excavation work is clear of services and is responsible and liable for any damage or alterations to services and any related costs.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

5) All private service connections, ie water, gas, power or other property services must be placed at least 450mm clear depth below surface level or in accordance with the requirements of the Supply Authority and installed at right angles to the building line.

6) Boundary trap and disconnected trap covers which cannot be placed inside the building line must be placed 300mm below the surface of the pavement within 230mm of the building line. No other fittings may be placed in the pavement without the consent of the Council, delegate or authorised officer.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.



CITY OF MELBOURNE

GPO Box 1603

Melbourne VIC 3001

ABN 55 370 219 287
Hotline (03) 9658 9658

Facsimile (03) 9654 4854

DX210487

ABN 55 370 219 287

CONSENT FOR WORKS

Road Management Act 2004

Road Management (Works and Infrastructure) Regulations 2005

Construction Management Group
3rd Floor 240 Little Collins Street
Melbourne Vic 3000

Telephone: 03 9658 9658
After Hours: 03 9658 9774

Consent Number: CW-2017-2003

Attention:

Consent is given for the proposed works subject to the attached general and specific conditions.

Council conditions must be adhered to prior to and/or during proposed works. Failure to comply with Council conditions and requirements of the Road Management (Works and Infrastructure) Regulations 2015 will result in this consent being revoked.

Any alterations to this consent will make it null and void.

Property Address:	Sabre Drive, PORT MELBOURNE
Applicant:	Aecom Australia Pty Ltd
Address of Applicant:	Level 10, Collins Square Tower 2, 727 Collins St, DOCKLANDS VIC 3008
Contact Details:	Averyll - 0499 252 502
Description of Work:	<p>Consent for works issued at Sabre Drive to assist with temporary vehicle crossing at the subject site. Date: 14 April 2017 to 31 May 2017 (Monday to Friday 7am to 7pm) (Saturday 8am to 3pm) Council ESG Reference: SR# 3611307 Full traffic management is required to direct pedestrians to a safe route of passage. The site is to be signed and managed in accordance with AS 1742.3 and Vic Roads Worksite Code of Practice. It is the responsibility of the applicant to ensure that all Council assets are reinstated in accordance with Councils current standards and specifications. No-one is to be denied vehicular or pedestrian access to their property. It is the responsibility of the applicant to apply for and obtain TSA reserved parking permits should the occupation of parking bays be required.</p>

Fees/Charges:

The following fees/charges apply to this consent:

Consent for Works Fee	\$170.50
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Signature of Delegated Officer: *Kimberley Cole* Date: 12 Apr 2017

Kimberley Cole

The holder of the consent must comply with the following conditions:

1. The consent holder ("Applicant") is responsible for ensuring the works are carried out in a safe manner, in compliance with these conditions and in accordance with the City of Melbourne Activities Local Law 2009.
2. The consent is not transferable. It must be held on site by the person in charge of the work and be produced on request by an authorised officer or a member of the Victoria Police Force. The consent holder must comply promptly with any notices and instructions.
3. Any variation required to a consent must be submitted to the Council or delegate for endorsement. Change/variation of work must not commence prior to relevant approval being granted in writing by the Council or delegate.
4. Vehicles must not cross any footpath to gain access to the site of the work or project unless vehicular crossing (either temporary or permanent) has been constructed to the approval of the Council or delegate or authorised officer.
5. Every stormwater channel adjacent to the site of work or project will be kept clear of obstruction at all times.
6. Rubbish or building materials must not be left in or on any road or public place.
7. Building materials spilt on to the roadway or the footpath must be removed immediately. Equipment used for transporting or handling building materials must not be washed in or on any road or public place or into any drain. Hoses must not be used for these purposes in or on a road or footpath.
8. Barricades must consist, unless alternative arrangements are approved, of minimum 1 metre height timber or steel rails on stable supporting posts at maximum 4.8 metre centres, continuous around the entire working area. Warning signage must be erected at each end of the barricaded area with the appropriate standard 'Detour', 'Road Closed', arrow etc.
9. Appropriate warning signage and lighting must be erected in accordance with AS1742.3.
10. Any occupation of space within the street environment must not hinder disabled facilities, carparks or access.
11. In regards to any areas or works that require the implementation of public protection, the Relevant Building Surveyor must assess all public protection structures.
12. Any area closed between sunset and sunrise shall be fitted with battery operated flashing lights in accordance with the Council's plans.
13. Unless otherwise stated, this consent must comply with the City of Melbourne's Code of Good Practice for Public Safety and Amenity at Construction Sites.
14. Safe and equitable pedestrian access is required at all times. Pedestrian ramps must be installed where necessary.
15. This consent does not exclude the consent holder from the City of Melbourne's Local Laws or the relevant parking laws.
16. The scheduled works are to be undertaken during the hours stated in this consent, or in a relevant Out of Hours consent.
 - 1) This permit relates to the surface opening of any road within the City of Melbourne and the specific use thereof of any part of a road and reinstatement or reconstruction of any road.
 - 2) When the abovementioned work has been completed, notice thereof must be given to the Council, delegate or authorised officer.
 - 3) Wood blocks, flagging, pitchers, bluestone kerbing or other material required to be replaced must be taken from the site to a location designated by the Council, delegate or authorised officer.
 - 4) The permit holder must ensure that all excavation work is clear of services and is responsible and liable for any damage or alterations to services and any related costs.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

5) All private service connections, ie water, gas, power or other property services must be placed at least 450mm clear depth below surface level or in accordance with the requirements of the Supply Authority and installed at right angles to the building line.

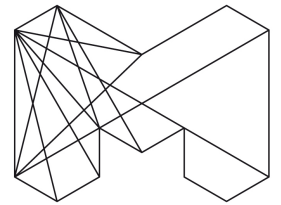
6) Boundary trap and disconnected trap covers which cannot be placed inside the building line must be placed 300mm below the surface of the pavement within 230mm of the building line. No other fittings may be placed in the pavement without the consent of the Council, delegate or authorised officer.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

CONSENT FOR WORKS

Road Management Act 2004

Road Management (Works and Infrastructure) Regulations 2005



CITY OF MELBOURNE

GPO Box 1603

Melbourne VIC 3001

ABN 55 370 219 287
Hotline (03) 9658 9658

Facsimile (03) 9654 4854

DX210487

ABN 55 370 219 287

Construction Management Group
3rd Floor 240 Little Collins Street
Melbourne Vic 3000

Telephone: 03 9658 9658
After Hours: 03 9658 9774

Consent Number: CW-2017-2074

Attention:

Consent is given for the proposed works subject to the attached general and specific conditions.

Council conditions must be adhered to prior to and/or during proposed works. Failure to comply with Council conditions and requirements of the Road Management (Works and Infrastructure) Regulations 2015 will result in this consent being revoked.

Any alterations to this consent will make it null and void.

Property Address:	Sardine Street, PORT MELBOURNE
Applicant:	Aecom Australia Pty Ltd
Address of Applicant:	Level 9, 8 Exhibition St, MELBOURNE VIC 3000
Contact Details:	Averyll - 03 9653 1234
Description of Work:	Consent for works issued at Sardine Street to assist with temporary vehicle crossing at the subject site. Date: 11 April 2017 to 31 May 2017 (Monday to Friday 7am to 7pm) (Saturday 8am to 3pm) Council ESG Reference: SR# 3605938 Full traffic management is required to direct pedestrians to a safe route of passage. The site is to be signed and managed in accordance with AS 1742.3 and Vic Roads Worksite Code of Practice. It is the responsibility of the applicant to ensure that all Council assets are reinstated in accordance with Councils current standards and specifications. No-one is to be denied vehicular or pedestrian access to their property. It is the responsibility of the applicant to apply for and obtain TSA reserved parking permits should the occupation of parking bays be required.

Date(s) permitted:

From: 11 Apr 2017

To: 31 May 2017

Fees/Charges:

The following fees/charges apply to this consent:

Consent for Works Fee

\$170.50

Signature of Delegated Officer:  Date: 13 Apr 2017

Jenny WATERSTONE

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

The holder of the consent must comply with the following conditions:

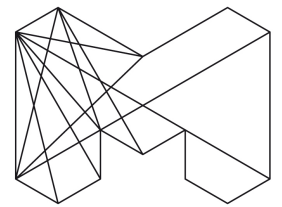
1. The consent holder ("Applicant") is responsible for ensuring the works are carried out in a safe manner, in compliance with these conditions and in accordance with the City of Melbourne Activities Local Law 2009.
2. The consent is not transferable. It must be held on site by the person in charge of the work and be produced on request by an authorised officer or a member of the Victoria Police Force. The consent holder must comply promptly with any notices and instructions.
3. Any variation required to a consent must be submitted to the Council or delegate for endorsement. Change/variation of work must not commence prior to relevant approval being granted in writing by the Council or delegate.
4. Vehicles must not cross any footpath to gain access to the site of the work or project unless vehicular crossing (either temporary or permanent) has been constructed to the approval of the Council or delegate or authorised officer.
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7. Building materials spilt on to the roadway or the footpath must be removed immediately. Equipment used for transporting or handling building materials must not be washed in or on any road or public place or into any drain. Hoses must not be used for these purposes in or on a road or footpath.
8. Barricades must consist, unless alternative arrangements are approved, of minimum 1 metre height timber or steel rails on stable supporting posts at maximum 4.8 metre centres, continuous around the entire working area. Warning signage must be erected at each end of the barricaded area with the appropriate standard 'Detour', 'Road Closed', arrow etc.
9. Appropriate warning signage and lighting must be erected in accordance with AS1742.3.
10. Any occupation of space within the street environment must not hinder disabled facilities, carparks or access.
11. In regards to any areas or works that require the implementation of public protection, the Relevant Building Surveyor must assess all public protection structures.
12. Any area closed between sunset and sunrise shall be fitted with battery operated flashing lights in accordance with the Council's plans.
13. Unless otherwise stated, this consent must comply with the City of Melbourne's Code of Good Practice for Public Safety and Amenity at Construction Sites.
14. Safe and equitable pedestrian access is required at all times. Pedestrian ramps must be installed where necessary.
15. This consent does not exclude the consent holder from the City of Melbourne's Local Laws or the relevant parking laws.
16. The scheduled works are to be undertaken during the hours stated in this consent, or in a relevant Out of Hours consent.
 - 1) This permit relates to the surface opening of any road within the City of Melbourne and the specific use thereof of any part of a road and reinstatement or reconstruction of any road.
 - 2) When the abovementioned work has been completed, notice thereof must be given to the Council, delegate or authorised officer.
 - 3) Wood blocks, flagging, pitchers, bluestone kerbing or other material required to be replaced must be taken from the site to a location designated by the Council, delegate or authorised officer.
 - 4) The permit holder must ensure that all excavation work is clear of services and is responsible and liable for any damage or alterations to services and any related costs.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

5) All private service connections, ie water, gas, power or other property services must be placed at least 450mm clear depth below surface level or in accordance with the requirements of the Supply Authority and installed at right angles to the building line.

6) Boundary trap and disconnected trap covers which cannot be placed inside the building line must be placed 300mm below the surface of the pavement within 230mm of the building line. No other fittings may be placed in the pavement without the consent of the Council, delegate or authorised officer.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.



CITY OF MELBOURNE

GPO Box 1603

Melbourne VIC 3001

ABN 55 370 219 287
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Facsimile (03) 9654 4854

DX210487

ABN 55 370 219 287

CONSENT FOR WORKS

Road Management Act 2004

Road Management (Works and Infrastructure) Regulations 2005

Construction Management Group
3rd Floor 240 Little Collins Street
Melbourne Vic 3000

Telephone: 03 9658 9658
After Hours: 03 9658 9774

Consent Number: CW-2017-1960

Attention:

Consent is given for the proposed works subject to the attached general and specific conditions.

Council conditions must be adhered to prior to and/or during proposed works. Failure to comply with Council conditions and requirements of the Road Management (Works and Infrastructure) Regulations 2015 will result in this consent being revoked.

Any alterations to this consent will make it null and void.

Property Address:	Todd Road, PORT MELBOURNE
Applicant:	Aecom Australia Pty Ltd
Address of Applicant:	Level 10, Collins Square Tower 2, 727 Collins St, DOCKLANDS VIC 3008
Contact Details:	Averyll - 0499 252 502
Description of Work:	Consent for works issued at Todd Road to assist with temporary vehicle crossing at the subject site. Date: 11 April 2017 to 31 May 2017 (Monday to Friday 7am to 7pm) (Saturday 8am to 3pm) Council ESG Reference: SR# 3605938 Full traffic management is required to direct pedestrians to a safe route of passage. The site is to be signed and managed in accordance with AS 1742.3 and Vic Roads Worksite Code of Practice. It is the responsibility of the applicant to ensure that all Council assets are reinstated in accordance with Councils current standards and specifications. No-one is to be denied vehicular or pedestrian access to their property. It is the responsibility of the applicant to apply for and obtain TSA reserved parking permits should the occupation of parking bays be required.

Fees/Charges:

The following fees/charges apply to this consent:

Consent for Works Fee	\$170.50
-----------------------	----------

Signature of Delegated Officer: *Kimberley Cole* Date: 11 Apr 2017

Kimberley Cole

The holder of the consent must comply with the following conditions:

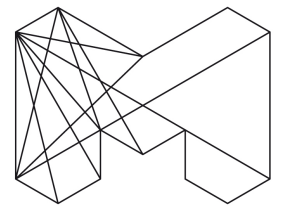
1. The consent holder ("Applicant") is responsible for ensuring the works are carried out in a safe manner, in compliance with these conditions and in accordance with the City of Melbourne Activities Local Law 2009.
2. The consent is not transferable. It must be held on site by the person in charge of the work and be produced on request by an authorised officer or a member of the Victoria Police Force. The consent holder must comply promptly with any notices and instructions.
3. Any variation required to a consent must be submitted to the Council or delegate for endorsement. Change/variation of work must not commence prior to relevant approval being granted in writing by the Council or delegate.
4. Vehicles must not cross any footpath to gain access to the site of the work or project unless vehicular crossing (either temporary or permanent) has been constructed to the approval of the Council or delegate or authorised officer.
5. Every stormwater channel adjacent to the site of work or project will be kept clear of obstruction at all times.
6. Rubbish or building materials must not be left in or on any road or public place.
7. Building materials spilt on to the roadway or the footpath must be removed immediately. Equipment used for transporting or handling building materials must not be washed in or on any road or public place or into any drain. Hoses must not be used for these purposes in or on a road or footpath.
8. Barricades must consist, unless alternative arrangements are approved, of minimum 1 metre height timber or steel rails on stable supporting posts at maximum 4.8 metre centres, continuous around the entire working area. Warning signage must be erected at each end of the barricaded area with the appropriate standard 'Detour', 'Road Closed', arrow etc.
9. Appropriate warning signage and lighting must be erected in accordance with AS1742.3.
10. Any occupation of space within the street environment must not hinder disabled facilities, carparks or access.
11. In regards to any areas or works that require the implementation of public protection, the Relevant Building Surveyor must assess all public protection structures.
12. Any area closed between sunset and sunrise shall be fitted with battery operated flashing lights in accordance with the Council's plans.
13. Unless otherwise stated, this consent must comply with the City of Melbourne's Code of Good Practice for Public Safety and Amenity at Construction Sites.
14. Safe and equitable pedestrian access is required at all times. Pedestrian ramps must be installed where necessary.
15. This consent does not exclude the consent holder from the City of Melbourne's Local Laws or the relevant parking laws.
16. The scheduled works are to be undertaken during the hours stated in this consent, or in a relevant Out of Hours consent.
 - 1) This permit relates to the surface opening of any road within the City of Melbourne and the specific use thereof of any part of a road and reinstatement or reconstruction of any road.
 - 2) When the abovementioned work has been completed, notice thereof must be given to the Council, delegate or authorised officer.
 - 3) Wood blocks, flagging, pitchers, bluestone kerbing or other material required to be replaced must be taken from the site to a location designated by the Council, delegate or authorised officer.
 - 4) The permit holder must ensure that all excavation work is clear of services and is responsible and liable for any damage or alterations to services and any related costs.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

5) All private service connections, ie water, gas, power or other property services must be placed at least 450mm clear depth below surface level or in accordance with the requirements of the Supply Authority and installed at right angles to the building line.

6) Boundary trap and disconnected trap covers which cannot be placed inside the building line must be placed 300mm below the surface of the pavement within 230mm of the building line. No other fittings may be placed in the pavement without the consent of the Council, delegate or authorised officer.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.



CITY OF MELBOURNE

GPO Box 1603

Melbourne VIC 3001

ABN 55 370 219 287
Hotline (03) 9658 9658

Facsimile (03) 9654 4854

DX210487

ABN 55 370 219 287

CONSENT FOR WORKS

Road Management Act 2004

Road Management (Works and Infrastructure) Regulations 2005

Construction Management Group
3rd Floor 240 Little Collins Street
Melbourne Vic 3000

Telephone: 03 9658 9658
After Hours: 03 9658 9774

Consent Number: CW-2017-1962

Attention:

Consent is given for the proposed works subject to the attached general and specific conditions.

Council conditions must be adhered to prior to and/or during proposed works. Failure to comply with Council conditions and requirements of the Road Management (Works and Infrastructure) Regulations 2015 will result in this consent being revoked.

Any alterations to this consent will make it null and void.

Property Address:	West Gate Bridge, PORT MELBOURNE
Applicant:	Aecom Australia Pty Ltd
Address of Applicant:	Level 10, Collins Square Tower 2, 727 Collins St, DOCKLANDS VIC 3008
Contact Details:	Averyll - 0499 252 502
Description of Work:	Consent for works issued at Westgate Bridge to assist with temporary vehicle crossing at the subject site. Date: 11 April 2017 to 31 May 2017 (Monday to Friday 7am to 7pm) (Saturday 8am to 3pm) Council ESG Reference: SR# 3605938 Full traffic management is required to direct pedestrians to a safe route of passage. The site is to be signed and managed in accordance with AS 1742.3 and Vic Roads Worksite Code of Practice. It is the responsibility of the applicant to ensure that all Council assets are reinstated in accordance with Councils current standards and specifications. No-one is to be denied vehicular or pedestrian access to their property. It is the responsibility of the applicant to apply for and obtain TSA reserved parking permits should the occupation of parking bays be required.

Fees/Charges:

The following fees/charges apply to this consent:

Consent for Works Fee	\$170.50
-----------------------	----------

Signature of Delegated Officer: *Kimberley Cole* Date: 11 Apr 2017

Kimberley Cole

The holder of the consent must comply with the following conditions:

1. The consent holder ("Applicant") is responsible for ensuring the works are carried out in a safe manner, in compliance with these conditions and in accordance with the City of Melbourne Activities Local Law 2009.
2. The consent is not transferable. It must be held on site by the person in charge of the work and be produced on request by an authorised officer or a member of the Victoria Police Force. The consent holder must comply promptly with any notices and instructions.
3. Any variation required to a consent must be submitted to the Council or delegate for endorsement. Change/variation of work must not commence prior to relevant approval being granted in writing by the Council or delegate.
4. Vehicles must not cross any footpath to gain access to the site of the work or project unless vehicular crossing (either temporary or permanent) has been constructed to the approval of the Council or delegate or authorised officer.
5. Every stormwater channel adjacent to the site of work or project will be kept clear of obstruction at all times.
6. Rubbish or building materials must not be left in or on any road or public place.
7. Building materials spilt on to the roadway or the footpath must be removed immediately. Equipment used for transporting or handling building materials must not be washed in or on any road or public place or into any drain. Hoses must not be used for these purposes in or on a road or footpath.
8. Barricades must consist, unless alternative arrangements are approved, of minimum 1 metre height timber or steel rails on stable supporting posts at maximum 4.8 metre centres, continuous around the entire working area. Warning signage must be erected at each end of the barricaded area with the appropriate standard 'Detour', 'Road Closed', arrow etc.
9. Appropriate warning signage and lighting must be erected in accordance with AS1742.3.
10. Any occupation of space within the street environment must not hinder disabled facilities, carparks or access.
11. In regards to any areas or works that require the implementation of public protection, the Relevant Building Surveyor must assess all public protection structures.
12. Any area closed between sunset and sunrise shall be fitted with battery operated flashing lights in accordance with the Council's plans.
13. Unless otherwise stated, this consent must comply with the City of Melbourne's Code of Good Practice for Public Safety and Amenity at Construction Sites.
14. Safe and equitable pedestrian access is required at all times. Pedestrian ramps must be installed where necessary.
15. This consent does not exclude the consent holder from the City of Melbourne's Local Laws or the relevant parking laws.
16. The scheduled works are to be undertaken during the hours stated in this consent, or in a relevant Out of Hours consent.
 - 1) This permit relates to the surface opening of any road within the City of Melbourne and the specific use thereof of any part of a road and reinstatement or reconstruction of any road.
 - 2) When the abovementioned work has been completed, notice thereof must be given to the Council, delegate or authorised officer.
 - 3) Wood blocks, flagging, pitchers, bluestone kerbing or other material required to be replaced must be taken from the site to a location designated by the Council, delegate or authorised officer.
 - 4) The permit holder must ensure that all excavation work is clear of services and is responsible and liable for any damage or alterations to services and any related costs.

NOTE: This consent must be kept on site and produced when required by Council's officers or Victoria Police and is subject to conditions specified being adhered to.

5) All private service connections, ie water, gas, power or other property services must be placed at least 450mm clear depth below surface level or in accordance with the requirements of the Supply Authority and installed at right angles to the building line.

6) Boundary trap and disconnected trap covers which cannot be placed inside the building line must be placed 300mm below the surface of the pavement within 230mm of the building line. No other fittings may be placed in the pavement without the consent of the Council, delegate or authorised officer.

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Appendix C

Survey Report

13th June 2017

Averyll Coyne,
AECOM
Tower 2, 727 Collins St,
Melbourne, VIC 3008

Dear Averyll,

Re: Fisherman's Bend Monitoring Well 47 Survey

We have completed the survey of the above well on 7th June 2017 and confirm the coordinates have been emailed to: Averyll.Coyne@aecom.com

These co-ordinates for the well are supplied as an addendum to this letter.

Should you have any queries regarding this or any other matter please do not hesitate to contact this office.

Yours faithfully,

Brenton Hansen
Engineering Surveyor
Tel: 9916 9130
Mob: 0402 061 224
Email: bhansen@headingassociates.com.au

Engineers&Surveyors

46 Stubbs Street, Kensington VIC 3031 PO Box 664 Moonee Ponds VIC 3039

T 61+ (03) 9916 9130 **F** 61+ (03) 9376 4831 **E** enquiries@headingassociates.com.au **W** www.headingassociates.com.au

Property Survey • Environmental Survey • Engineering Survey • Project Management • Design

ADDENDUM TO REPORT

Fisherman's Bend Precinct Monitoring Well 47 Survey						
#ID WELL	MGA94(Zn55)		AHD			Comment
	Easting (m)	Northing (m)	Top of Gatic	Top of PVC Pipe	Existing Surface	
GW47	315884.15	5811686.55	1.982	1.918	1.982	New Well

Engineers & Surveyors

46 Stubbs Street, Kensington VIC 3031 PO Box 664 Moonee Ponds VIC 3039

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Property Survey • Environmental Survey • Engineering Survey • Project Management • Design

10th June 2017

Averyll Coyne,
AECOM
Tower 2, 727 Collins St,
Melbourne VIC 3008

Dear Averyll,

Re: Fisherman's Bend Monitoring Well Survey

We have completed the survey of the above precinct from the 22nd-24th of May 2017 and confirm the coordinates have been emailed to Averyll.Coyne@aecom.com

Co-ordinates have been supplied for each location supplied on the mud map provided on site, and have been annotated accordingly. These co-ordinates are supplied as an addendum to this letter.

Please note, certain requested wells could not be recorded due to the position of the Well in restricted areas, Namely:

- GW42: Located in the Boeing Area
- GW83: Located in the Melbourne International Shooting Club and Go Karts
- GMW83: Located in DSTO
- GMW02, DAMW5_02, MW9A1, MW1371_02, MW1327_02: Located in GMH Land

Should you have any queries regarding this or any other matter please do not hesitate to contact this office.

Yours faithfully

Leigh Patton

Engineering Surveyor

Tel: (03) 9916 9130

Fax: (03) 9376 4831

Email: lpatton@headingassociates.com.au

Engineers & Surveyors

46 Stubbs Street, Kensington VIC 3031 PO Box 664 Moonee Ponds VIC 3039

T 61+ (03) 9916 9130 F 61+ (03) 9376 4831 E enquiries@headingassociates.com.au W www.headingassociates.com.au

Property Survey • Environmental Survey • Engineering Survey • Project Management • Design

ADDENDUM TO REPORT

Fisherman's Bend Precinct Monitoring Well Survey						
#ID WELL	MGA94(Zn54)		AHD			Comment
	Easting (m)	Northing (m)	Top of Gatic	Top of PVC Pipe	Existing Surface	
GW39	315266.55	5811089.92	2.021	1.940	2.024	Existing Well
GW40	315254.09	5810896.88	2.259	2.194	2.256	New Well
GW41	315652.79	5811410.02	1.962	1.877	1.961	New Well
GW43	317136.82	5812044.18	2.243	2.167	2.245	New Well
GW44	315732.45	5810920.84	N/A	2.981	2.546	Existing Yellow "Stickup" Well
GW45	315681.68	5810678.12	3.778	3.718	3.662	New Well
GW46	315977.41	5811489.27	2.410	2.340	2.404	New Well
GW47	TBC	TBC	TBC	TBC	TBC	TBC
GW48	315865.15	5811133.39	2.388	2.332	2.331	New Well
GW49	315843.92	5810975.08	N/A	4.766	4.159	Existing Yellow "Stickup" Well
GW50	315878.03	5810732.38	3.367	3.297	3.301	New Well
GW51	316122.65	5811753.17	2.441	2.339	2.444	New Well
GW52	316170.42	5811492.44	2.754	2.688	2.756	New Well
GW53	316085.28	5811301.56	2.724	2.616	2.694	New Well
GW54	316181.54	5811047.99	3.526	3.447	3.392	New Well
GW56	316180.30	5810748.00	2.021	1.952	2.009	New Well
GW57	316295.71	5811878.79	1.951	1.791	1.943	Existing Well
GW61	316372.13	5810788.84	3.319	3.186	3.259	New Well
GW62	316629.77	5811943.45	2.061	1.984	2.067	New Well
GW65	316541.09	5810957.84	4.559	4.339	4.498	New Well
GW67	316858.86	5812024.37	2.177	2.101	2.180	New Well
GW69A	316844.56	5811155.92	3.924	3.833	3.904	Existing, Unsure which well was GW69
GW69B	316823.05	5811148.84	3.882	3.736	3.850	Existing, Unsure which well was GW69
GW70	317043.31	5811774.92	2.131	2.054	2.141	New Well
GW72	317213.88	5811273.01	3.570	3.363	3.540	New Well
GW73	317394.88	5811674.82	3.051	2.956	3.059	New Well
GW74	317328.25	5811554.10	3.055	3.007	3.050	New Well
GW75	317364.60	5811316.22	3.758	3.637	3.709	New Well
GW76	317520.73	5811885.61	2.402	2.263	2.394	New Well
GW77	317518.02	5811734.40	2.163	1.956	2.165	New Well
GW80	317862.16	5811922.68	2.182	2.058	2.185	New Well
GW81	317860.71	5811790.84	2.467	2.408	2.463	New Well
GW82	317326.53	5812100.49	1.988	1.887	1.992	New Well

Engineers & Surveyors

46 Stubbs Street, Kensington VIC 3031 PO Box 664 Moonee Ponds VIC 3039

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Property Survey • Environmental Survey • Engineering Survey • Project Management • Design



Survey Datum based on MELBOURNE SOUTH PM 242
316 537.980
5 810 216.398
1.921



Engineers & Surveyors

46 Stubbs Street, Kensington VIC 3031 PO Box 664 Moonee Ponds VIC 3039

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Property Survey • Environmental Survey • Engineering Survey • Project Management • Design



Appendix D

Waste Transport Documentation

ENVIRONMENT PROTECTION AUTHORITY VICTORIA WASTE TRANSPORT CERTIFICATE

1370616



**EPA
VICTORIA**

GPO BOX 4395
MELBOURNE 3001

1300 372 842
1300 EPA VIC

epa.vic.gov.au

PART A

To be completed by the Producer of the Waste

1. Name of Waste Producer
AECOM
 Address of Site of Waste Source
END OF KOORINGA WAY PORT MELBOURNE
 Postcode 3207
 Name of Emergency Contact
E. EGGLISTON Phone 0488 488523

2. Proposed Disposal/Treatment/Storage Facility
TOXFREE State VIC

3. Intended Treatment Option Recycling Landfill Energy Recovery Chem/Phys Treatment
 Storage Incineration Immobilisation Biodegradation Other

4. Description of Waste
CONTAMINATED WATER

5. Waste Form L Waste Code L150 Hazard Category Contaminants Waste Origin 2922
 UN Number 30X1 Class Packing Group Bulk/No. of Packages 2

Amount of Waste kilograms or cubic metres or 610 litres

I declare that to the best of my knowledge and belief the above information is true and correct.
 Name and Position ERIK EGGLISTON
 Signature [Signature] Date 18/5/17

PART B

To be completed by the Waste Transporter

6. Name of Transporter TOXFREE
 Address 83 DOHERTY RD LAJERTON NORTH
 Vehicle No. 1 Registration 1DJ6NG Transport Permit No. 111196 Vehicle No. 2 Registration Transport Permit No.
 I acknowledge receipt of the waste described in part A.
 Name (in block letters) W ARMSTRONG
 Signature [Signature] Date 18/5/17

PART C

To be completed by the Waste Receiver

7. Name of Disposal/Treatment/Storage Facility Licence No.
 Address Type of Treatment

8. Amount of Waste kilograms or cubic metres or litres

9. Are there any discrepancies between the wastes described above and the waste received?
 YES NO Briefly note discrepancy:.....

10. Name and address of any other waste receiver to which the waste receiver intends that the waste be transported

11. I hereby acknowledge acceptance of the waste described in part A.
 Name
 Signature..... Date

PLEASE USE BLOCK LETTERS

COPY 1 - TO BE FORWARDED TO EPA WITHIN SEVEN (7) DAYS WITH PART A & B
COMPLETE BY THE PERSON/COMPANY WHO COMPLETED PART A

ENVIRONMENT PROTECTION AUTHORITY VICTORIA WASTE TRANSPORT CERTIFICATE

1370616



GPO BOX 4395
MELBOURNE 3001
1300 372 842
1300 EPA VIC
epa.vic.gov.au

PART A

To be completed by the Producer of the Waste

1. Name of Waste Producer
AE COM

Address of Site of Waste Source
END OF KOORINGA WAY, PORT MELBOURNE

Name of Emergency Contact
E. EGGLSTON Postcode 3207

Phone 0488 488523

2. Proposed Disposal/Treatment/Storage Facility
TOXFREE State VIC

3. Intended Treatment Option

Recycling <input type="checkbox"/>	Landfill <input type="checkbox"/>	Energy Recovery <input type="checkbox"/>	Chem/Phys Treatment <input type="checkbox"/>
Storage <input checked="" type="checkbox"/>	Incineration <input type="checkbox"/>	Immobilisation <input type="checkbox"/>	Biodegradation <input type="checkbox"/>
Other <input type="checkbox"/>			

4. Description of Waste
CONTAMINATED WATER

5. Waste Form L Waste Code L150 Hazard Category

Contaminants Waste Origin 2922

UN Number 30.XI Class Packing Group Bulk/No. of Packages 2

Amount of Waste kilograms or cubic metres or 610 litres

I declare that to the best of my knowledge and belief the above information is true and correct.

Name and Position E. EGGLSTON

Signature [Signature] Date 18/5/17

PART B

To be completed by the Waste Transporter

6. Name of Transporter TOXFREE

Address 83 DOHERTY RD, LAJERTON NORTH

Vehicle No. 1 Registration 10I6NG Transport Permit No. 111196 Vehicle No. 2 Registration Transport Permit No.

I acknowledge receipt of the waste described in part A.

Name (in block letters) M. ANNISTON

Signature [Signature] Date 18/5/17

PART C

To be completed by the Waste Receiver

7. Name of Disposal/Treatment/Storage Facility Licence No.

Address Type of Treatment

8. Amount of Waste kilograms or cubic metres or litres

9. Are there any discrepancies between the wastes described above and the waste received?
YES NO Briefly note discrepancy:

10. Name and address of any other waste receiver to which the waste receiver intends that the waste be transported
.....

11. I hereby acknowledge acceptance of the waste described in part A.

Name

Signature Date

PLEASE USE BLOCK LETTERS

COPY 2 - TO BE RETAINED BY THE PERSON/COMPANY WHO COMPLETED PART A

EPA-F012

Tox Free Australia Pty Ltd

BN 31127853561
 e: TES Laverton
 Dohertys Road
 /ERTON NORTH, VIC 3026
 STRALIA
 Box 240
 ONA NORTH, VIC 3025

Phone No.: 03 9369 4222
 Fax No.: 03 9369 4380
 E-Mail: TESE.Accounts@toxfree.com.au
 Website: www.toxfree.com.au



CUSTOMER COPY

Job Sheet

Sales Order No.: S000303501

Document Date: 24/04/17
 Customer No.: C001557
 Customer PO No.: 60537182
 ANZSIC Code: 2922

COM SERVICES

g Cunningham
 RTITUDE VALLEY, QLD 4006
 STRALIA

Contact: Dug Cunningham
 Phone No.: 0400 549 494
 E-Mail: Dugald.Cunningham@aecom.com

Salesperson: Jay Chrisostom
 Phone No.: 0409 809 002
 E-Mail: j.chrisostom@toxfree.com.au
Task Date: 24/04/2017

Description	Proper Shipping Name	Waste Material Code	UN-Nr	Class or Division	Subsidiary Risk	Packing Group	Quantity	Unit of Measure	NEPM Code/ CW Category	Quantity Collected	WTC/CWT F No.	Driver/Operator Comments
026281 Collect from Toxfree Laverton Nth Dohertys Road /ERTON NORTH, VIC 3026							4	Each				
m - 205L - S/C/H - ADG 37182 task 3.4 care of Averyll Coyne AECOM												
area is for additional items not manifested:												
.....												
.....												
.....												
.....												
.....												
.....												

Customer Name:.....
 Customer Signature:.....
 Date:.....

Operations:.....
 Created By:.....

Driver:.....
 Time In:.....
 Time Out:.....

Tox Free Australia Pty Ltd

ABN 31127853561

Site: TES Laverton

83 Dohertys Road
LAVERTON NORTH, VIC 3026

AUSTRALIA

PO Box 240

ALTONA NORTH, VIC 3025

Phone No.: 03 9369 4222

Fax No.: 03 9369 4380

E-Mail: TESE.Accounts@toxfree.com.au

Website: www.toxfree.com.au



CUSTOMER COPY

Job Sheet

Sales Order No.: SO00312651

Document Date: 17/05/17

Customer No.: C001557

Customer PO No.: NEED PO

ANZSIC Code: 2922

Salesperson: Jay Chrisostom

Phone No.: 0409 809 002

E-Mail: j.chrisostom@toxfree.com.au

Task Date: 18/05/2017

AECOM SERVICES

Erik Eggleston

FORTITUDE VALLEY, QLD 4006

AUSTRALIA

Contact: Erik Eggleston

Phone No.: 0488 488 523

E-Mail: erik.eggleston@aecom.com

Description	Proper Shipping Name	Waste Material Code	UN-Nr	Class or Division	Subsidiary Risk	Packing Group	Quantity	Unit of Measure	NEPM Code/ CW Category	Quantity Collected	WTC/CWT F No.	Driver/Operator Comments
TS069549 Job at Westgate Park End of Kooringa Way Off Todd Rd PORT MELBOURNE, VIC 3207 AUSTRALIA												
Transport (Hourly)							1	Hour				
Waste Tracking Fee							1	Each				
Receive: Contaminated Water	NON DANGEROUS GOOD LIQUID	0066-064					3	205L Drum	L150	2 FULL	2 EMPTY	

This area is for additional items not manifested:

Customer Name:.....

Customer Signature:.....

Date:.....

Operations:.....

Created By:.....

Driver:.....

Time In:.....

Time Out:.....



Appendix E

Bore Logs

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 315254.09 mE 5810896.88 mN
 Orientation Elevation 2.197 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Formings</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction	
		Sample ID	Analysis	PID (ppm)								
NDD	0.05				0.0	FILL: Dark brown, Fine grained, Dry, Silty Sand.			No odour.			
					0.50	Rubble with asphalt and brick inclusions.						
NDD	0.70				1.00	Dark Brown with Orange Mottles, Low Plasticity, Dry, Clay with minor fine sand.			Slight organic / sulphur odour.			
					1.50	Black / Brown, Soft, Wet, Gravelly Clay with minor brick inclusions.						
HSA	1.50 GW40-1.5				2.1	NATURAL: Brown / Yellow, Fine to Medium grained, Well Sorted, Saturated, Sand.						
					2.6	Becoming Grey.						
HSA	GW40-3.0				3.0	Approximately 10% Shell inclusions.						
					4.0	Grey / Blue, High Plasticity, Saturated, Clay with minor shell inclusions.						
HSA	GW40-4.5				4.5	Grey, Fine to Medium grained, Well Sorted, Saturated, Sand.						
					2.6							
GROUNDWATER OBSERVATIONS Depth 1.8m Reading 1 Date -						Date logged 24/04/2017 Logged AB Checked		Remarks GW40 Terminated at 4.5m - Target Depth NDD = Non Destructive Digging HSA = Hollow Stem Auger			Driller Chadwick Geotechnics Drill Rig Started 12/04/2017 Finished 24/04/2017	
										Page 1 of 1		

DRILL-HOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 315652.79 mE 5811410.02 mN
 Orientation Elevation 1.877 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Groundwater</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD					0.30		FILL: Concrete footpath.		No odour.		
					0.50		Black / Dark Grey, Fine to Medium grained, Dry, Sand.		No odour.		
					0.90		Brown with Orange Mottles, Fine to Medium grained, Loosely Packed, Dry, Sand.		No odour.		
					1.00		Orange, Medium to Coarse grained, Loosely Packed, Quartzose, Dry, Sand.		No odour.		
					1.00		Pale Yellow, Fine to Medium grained, Loosely Packed, Dry, Sand.		No odour.		
HSA	1.50 GW41-1.5			0.1	1	Becoming Moist. Becoming Brown. NATURAL: Black / Brown, Fine to Medium grained, Moderately Sorted, Moist, Sand.					
	GW41-1.8			1.2	2	Grey / White, Very Fine to Fine grained, Well Sorted, Saturated, Sand.					
					3	30% Fine Shell inclusions.					
					4						
	GW41-5.0			0.7		30% Coarse Shell inclusions.					
GROUNDWATER OBSERVATIONS Depth 1.8m Reading 1 Date -						Date logged 21/04/2017 Logged AB Checked		Remarks GW41 Terminated at 4.5m - Target Depth NDD = Non Destructive Digging HSA = Hollow Stem Auger		Driller Chadwick Geotechnics Drill Rig Started 13/04/2017 Finished 21/04/2017	
Page 1 of 1											

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 317136.82 mE 5812044.18 mN
 Orientation Elevation 2.167 mAHDTOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Forming</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		FILL: Brown / Yellow, Fine grained, Soft, Dry, Clayey Sand, overlain by Railway Ballast.		No odour.		
	0.50				0.0			No odour.			
	1.00				1.0		Mottled Pale Orange / Yellow, Fine to Medium grained, Loosely Packed, Dry, Sand.	No odour.			
	1.50				0.0		Becoming Moist.		No odour.		
	1.70				0.0		Mottled Pale Orange / Yellow, Fine to Medium grained, Loosely Packed, Moist, Sand.		No odour.		
Sonic	1.80				0.0		NATURAL: Orange / Pale Grey, Fine to Medium grained, Loosely Packed, Saturated, Sand.				
	2.00				2.0		Becoming Pale Grey.				
	2.50				0.0		Minor Shell inclusions.				
	3.00				3.0						
	4.00				4.0						
	4.90				5.0						
GROUNDWATER OBSERVATIONS Depth Reading Date 1.8m 1 - 1.86m 2 -						Date logged 20/04/2017 Logged JLM Checked	Remarks GW43 Terminated at 5.0m - Target Depth NDD = Non Destructive Digging	Driller Chadwick Geotechnics Drill Rig Started 12/04/2017 Finished 20/04/2017			
Page 1 of 1											

DRILL-HOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 315681.68 mE 5810678.12mN
 Orientation Elevation 3.718 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Grading Formations</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0	[Cross-hatched pattern]	FILL: Brown, Soft, Low Plasticity, Dry, Sandy Clay with organic material.		No odour.	[Water table symbol]	[Well construction pattern]
							Light Brown, Low Plasticity, Dry, Sandy Clay with some bricks.				
	0.50				0.0		Becoming Sandy.				
	1.00				0.0	1					
	1.50	GW45-1.5			0.0		Dry, Loosely Packed, Sandy Clayey Gravel, with broken glass, bricks and concrete.				
		GW45-2.0			0.0	2	Becoming Moist.				
		GW45-2.5			0.0						
		GW45-3.0			0.0	3					
		GW45-3.3			0.0		NATURAL: Grey / White, Fine to Medium grained, Moist, Sand with 10% Shell inclusions.				
							Becoming Black, Saturated.				
HSA							Becoming Grey, Fine.				
		GW45-4.9			0.0	5					

GROUNDWATER OBSERVATIONS
 Depth 3.3m Reading 1 Date -

Date logged 24/04/2017
 Logged AB
 Checked

Remarks
 GW45 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 18/04/2017
 Finished 24/04/2017

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 315977.41 mE 5811489.27 mN
 Orientation Elevation 2.340 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Forming</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0-100%				0.0		FILL: Asphalt Roadway.		Slight organic odour.		
		0.15			0.0		Dark Brown, Clayey Gravel with basalt. Roadbase.				
					0.0		Brown, Fine grained, Gravelly Sand with Clay and broken glass inclusions.				
		0.50			0.0		Pale Brown, Medium grained, Dry, Sand.				
HSA	0-100%				1.00		NATURAL: Orange / Yellow, Medium to Coarse grained, Dry, Sand.		No odour.		
					0.0		Light Brown, Fine grained, Loosely Packed, Moist, Sand.				
		GW46-2.0			0.0		Grey, Fine grained, Loosely Packed, Moist to Wet, Sand.				
		GW46-2.2			0.0		With 20% Shell inclusions.				
HSA	0-100%				2.00		Becoming Saturated.		No odour.		
		GW46-2.7			0.0		Lenses of Darker Compacted Shells.				
		GW46-3.0A GW46-3.0B			0.0						
		GW46-4.0A GW46-4.0B			0.0						

GROUNDWATER OBSERVATIONS		
Depth	Reading	Date
2.3m	1	-

Date logged 24/04/2017
 Logged TM
 Checked

Remarks
 GW46 Terminated at 4.5m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 18/04/2017
 Finished 24/04/2017

DRILL-HOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 315884.15 mE 5811686.55 mN
 Orientation Elevation 1.918 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Formings</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0-100%				0.0	FILL: Asphalt Carpark.			No odour.		
					0.2	Soft, Moist, Gravel with minor Sandy Clay.			No odour.		
					0.50	Grey / Pale Yellow, Medium grained, Loosely Packed, Dry, Sand.			No odour.		
					1.00	Orange, Medium grained, Loosely Packed, Dry, Sand.			No odour.		
HSA	0-100%	1.50 GW47-1.5			0.0 0.1	NATURAL: Grey / White, Fine to Medium grained, Moderately Sorted, Moist, Sand.					
		GW47-1.9			0.3 2	Grey, Fine, Saturated, Sand with 20% Shell inclusions.					
		GW47-3.0			0.7 3	30% Shell inclusions.					
		GW47-4.5			1.4 4	20% Shell inclusions.					

GROUNDWATER OBSERVATIONS
 Depth - Reading Date
 1.9m 1 -

Date logged 21/04/2017
 Logged AB
 Checked

Remarks
 GW47 Terminated at 4.5m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 13/04/2017
 Finished 21/04/2017

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 315865.15 mE 5811133.39 mN
 Orientation Elevation 2.332 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Core Loss/Lift</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
	Sample ID	Analysis	PID (ppm)							
NDD	0-100%			0.0		FILL: Dark Brown, Loosely Packed, Dry, Sandy Silt. Loosely Packed, Dry, Basalt Fill with red brick rubble and organic material.		No odour.		
				0.50		Asphalt rubble.	No odour.			
				0.80		Dark Grey, Medium grained, Loosely Packed, Dry, Sand.	No odour.			
				1.00		Becoming Pale Yellow.				
HSA	1.50			0.0		NATURAL: Black, Fine grained, Moderately Sorted, Moist, Sand.				
	GW48-1.5			0.0						
	GW48-1.9			0.7		Brown, Fine to Medium grained, Saturated, Sand.				
	GW48-2.0			0.7		Grey, Fine grained, Well Sorted, Saturated, Sand.				
				0.4						
				0.7		10% Shell inclusions.				
				0.7						

GROUNDWATER OBSERVATIONS
 Depth 1.9m Reading 1 Date -

Date logged 20/04/2017
 Logged AB
 Checked

Remarks
 GW48 Terminated at 4.5m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 17/04/2017
 Finished 20/04/2017

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 315878.03 mE 5810732.38 mN
 Orientation Elevation 3.297 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Grading Formations</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05			0.0		FILL: Fine grained, Soft, Moist, Silty Sand with minor brick inclusions and organic material. Brown with Orange Mottles, Low Plasticity, Dry, Clay with concrete inclusions.		No odour.			
	0.50			0.0		Brick inclusions.	No odour.				
	1.00			0.0		Concrete inclusions.					
	1.50	GW50-1.5		0.0		0.0	Dark brown, Fine grained, Loosely Packed, Dry, Sand with granite gravel. Brown / Orange, Medium grained, Sand with gravel.	No odour.			
	GW50-2.0			0.1		2					
HSA	GW50-2.5			1.7							
	GW50-3.0			2.0	3	NATURAL: Black / Grey, Fine to Medium grained, Moderately Sorted, Moist, Sand. Becoming Wet.					
	GW50-3.1			2.1		20% Fine Shell inclusions. Becoming Black.					
	GW50-4.9			10.9	5	Grey, Fine grained, Well Sorted, Saturated, Sand.		Slight organic odour.			

GROUNDWATER OBSERVATIONS		
Depth	Reading	Date
4m	1	-

Date logged 20/04/2017
 Logged AB
 Checked

Remarks
 GW50 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 13/04/2017
 Finished 20/04/2017

DRILL-HOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 316122.65 mE 5811753.17 mN
 Orientation Elevation 2.339 mAHDTOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Graving Formations</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
	Core Loss/Lift	Sample ID	Analysis							
NDD	0-100%					FILL: Dark Brown, Soft, Moist topsoil with organic matter.				
		0.05		0.0		Dark Brown, Fine to Medium grained, Loosely Packed, Dry, Silty Sand with organic matter.		No odour.		
		0.50		0.0						
		GW51 1		0.0	1	Asphalt. Basalt Gravel.		No odour.		
		GW51 1.5 GW51-1.5		0.0		Pale Grey, Medium grained, Loosely Packed, Moist, Sand. Black, Fine to Medium grained, Well Sorted, Dry, Sand.				
						Becoming Grey / White.				
		GW51-2.0 GW51-2.1			2	Becoming Saturated.				
						NATURAL: Grey / White, Fine grained, Well Sorted, Wet to Saturated, Sand.				
					3	10% Shell inclusions.				
					4	Grey / White, Fine grained, Well Sorted, Wet to Saturated, Sand. 10% Shell inclusions.				
HSA				5						
	GW51-4.9									

GROUNDWATER OBSERVATIONS
 Depth 2m Reading 1 Date -

Date logged 20/04/2017
 Logged AB
 Checked

Remarks
 GW51 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 11/04/2017
 Finished 20/04/2017

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 316170.42 mE 5811492.44 mN
 Orientation Elevation 2.688 mAH TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Graving / Drilling</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		FILL: Dark Brown, Medium grained, Soft, Moist, Silty Sand with organic material.		No odour.		
					0.50		Light Brown, Fine to Medium grained, Loosely Packed, Dry, Sand with gravel.				
					0.70		Pale Grey, Medium grained, Sand.				
					1.00		Brown / Red, Loosely Packed, Silty Sand with organic material.				
					1.50		Light Grey / White, Fine to Medium grained, Loosely Packed, Dry Sand with minor organic material and concrete inclusions.				
					2.00		NATURAL: Black / Brown, Fine to Coarse grained, Moist, Sand.				
					2.50		Becoming Fine to Medium grained.				
					3.00		Fine grained, Well Sorted, Saturated, Sand.				
					3.70						
					4.50						
HSA											
GROUNDWATER OBSERVATIONS		Date logged		Remarks		Driller		Chadwick Geotechnics			
Depth	Reading	Date	21/04/2017	GW52 Terminated at 4.5m - Target Depth		Drill Rig		Started 11/04/2017			
2.6m	1	-	Logged AB	NDD = Non Destructive Digging HSA = Hollow Stem Auger		Finished 21/04/2017					
		Checked				Page 1 of 1					

DRILL-HOLE LOG ENVIRONMENTAL - FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 316085.28 mE 5811301.56 mN
 Orientation Elevation 2.616 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Graving Formwork</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		FILL: Dark Brown, Dry, Silty Sand with organic matter.		No odour.		
	0.50				0.0		Brown, Fine to Medium grained, Loosely Packed, Dry, Sandy Clay with concrete and asphalt inclusions.		No odour.		
	0.70				0.0		Becoming Pale Yellow.				
	1.00				0.0		1	Dark Grey, Medium grained, Loosely Packed, Dry, Sand with minor clay.			No odour.
	1.50	GW53-1.5			0.0		0.0	NATURAL: Brown, Fine to Medium grained, Dry, Sand.			
HSA					0.0		Becoming White.				
		GW53-2.0			0.0		2	Dark Brown / Brown, Fine to Coarse grained, Poorly Sorted, Wet, Sand.			
		GW53-2.5			0.0		Becoming Fine to Medium grained.				
		GW53-3.0			0.0		3	Grey, Fine grained, Saturated, Sand.			
					0.0	4					
	GW53-4.5				0.0						

GROUNDWATER OBSERVATIONS
 Depth 3m Reading 1 Date -

Date logged 21/04/2017
 Logged AB
 Checked

Remarks
 GW53 Terminated at 4.5m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 12/04/2017
 Finished 21/04/2017

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 316181.54 mE 5811047.99 mN
 Orientation Elevation 3.447 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Coring Methods</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction		
		Sample ID	Analysis	PID (ppm)									
NDD	0.05				0.0		FILL: Brown, Soft, Dry, Silty Sand with gravel and organic material. Brown, Fine to Medium grained, Loosely Packed, Dry, Sand.		No odour.				
	0.50				0.0		Concrete and brick inclusions.						
	1.00				0.0		1						
	1.20				0.0			Brown / Yellow with Mottles, Low Plasticity, Dry, Clay with gravel.			No odour.		
	1.30				0.0			Brown / Yellow, Fine grained, Loosely Packed, Dry, Clayey Sand.					
	1.50				0.0			Grey with Orange Mottles, Low PLasticity, Dry, Clay.					
	GW54-1.6				0.0			Orange / White, Firm, Dry, Silty Clay.					
	HSA						2		NATURAL: Brown / Orange, Fine grained, Well Sorted, Dry, Sand.				
		GW54-2.1					0.0						
		GW54-2.6					0.0				Becoming White.		
GW54-3.1					0.0	3	Becoming Saturated.						
GW54-3.2					0.0		Becoming Light Brown.						
					4		Black / Brown, Fine to Medium grained, Poorly Sorted, Saturated, Sand.						
					5		Grey, Fine grained, Well Sorted, Saturated, Sand.						
	GW54-5.0				0.0								
GROUNDWATER OBSERVATIONS						Date logged		Remarks		Driller			
Depth 3m						20/04/2017		GW54 Terminated at 5.0m - Target Depth		Chadwick Geotechnics			
Reading 1						Logged AB		NDD = Non Destructive Digging		Drill Rig			
Date -						Checked		HSA = Hollow Stem Auger		Started 13/04/2017			
										Finished 20/04/2017			
										Page 1 of 1			

DRILL-HOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 316180.30 mE 5810748.00mN
 Orientation Elevation 1.952 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Graving Forming</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05			0.0		FILL: Brown / Grey, Fine to Medium grained, Loosely Packed, Dry, Sand with organic material, bark and brick inclusions.		No odour.			
	0.50			0.0		Minor Clay and ash.		No odour.			
	1.00			0.0		1	Brick inclusions.				
				0.0			Becoming Moist.				
				0.0			Dark Brown / Grey, Fine to Medium grained, Loosely Packed, Moist, Sand with minor silt and shell inclusions.			Slight organic odour.	
HSA	1.50 GW56-1.5			0.0		NATURAL: Black / Grey, Fine to Medium grained, Well Sorted, Moist, Sand with 10% shell inclusions.					
	GW56-2.0			0.0		2	With 20% Shell inclusions.				
	GW56-2.5			0.0			Grey / white, Fine grained, Well Sorted, Saturated, Sand with 5% fine shell inclusions.				
	GW56-2.7			0.0		3					
				0.0	4						
	GW56-4.4			0.0							
GROUNDWATER OBSERVATIONS Depth 2.5m Reading 1 Date -						Date logged 19/04/2017 Logged AB Checked	Remarks GW56 Terminated at 4.5m - Target Depth NDD = Non Destructive Digging HSA = Hollow Stem Auger	Driller Chadwick Geotechnics Drill Rig Started 13/04/2017 Finished 19/04/2017			
Page 1 of 1											

DRILL-HOLE LOG ENVIRONMENTAL - FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 316372.13 mE 5810788.84 mN
 Orientation Elevation 3.186 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog Formings</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		FILL: Dark Brown, Loosely packed, Moist, Sandy Silt with organic material and minor gravel. Dark Brown, Fine grained, Loosely Packed, Dry, Silty Sand with minor clay.		No odour.		
	0.50				3.8		Basalt, slate and scoria gravel and cobble inclusions.		No odour.		
Sonic	1.00				8.6		Dark Brown, Fine grained, Loosely Packed, Dry, Silty Sand with minor organic material, gravel and brick inclusions. Dry, Sandy Gravel with brick and building material.		No odour.		
	1.50				1.5		Building Material including broken glass, plastic, gravel, asphalt.				
Sonic	2.00				2.0		Becoming Wet.				
	2.50				13.8				Hydrocarbon odour.		
Sonic	3.00				5.3						
	4.50				0.3						
Sonic	4.60				5.3		NATURAL: Grey, Fine grained, Loosely Packed, Well Sorted, Dry, Sand with minor shell inclusions.				
	5.00				0.0						

DRILL-HOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

GROUNDWATER OBSERVATIONS		
Depth	Reading	Date
2.345m	1	-

Date logged 24/04/2017
 Logged JLM
 Checked

Remarks
 GW61 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging

Driller Chadwick Geotechnics
 Drill Rig
 Started 11/04/2017
 Finished 24/04/2017
 Page 1 of 1

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 316629.77 mE 5811943.45mN
 Orientation Elevation 1.984 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Grading Formations</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05			0.0		FILL: Brown, Fine to Medium grained, Loosely Packed, Dry, Silty Sand with organic material, gravel and minor glass.		No odour.			
	0.40			0.0		Minor clay.		No odour.			
	0.50			0.0		Pale Brown / Yellow, Fine to Medium grained, Loosely Packed, Dry, Sand.					
	1.00			0.0		1	Pale Brown / Yellow, Medium to Coarse grained, Loosely Packed, Dry, Sand with brick inclusions.			No odour.	
	1.10			0.0		Brown with Orange Mottles, Fine to Medium grained, Loosely Packed, Moist, Sand.					
	1.50			0.0		Becoming Wet.					
	2.00	GW62-2.0A GW62-2.0B		0.0		2	NATURAL: Brown, Fine grained, Loosely Packed, Wet, Sand with organic material.				
		GW62-2.7A GW62-2.7B		0.0		3	Grey, Fine grained, Loosely Packed, Saturated, Sand with shell inclusions.				
				0.0		20% Shell inclusions.					
				0.0		5% Shell inclusions.					
HSA				0.0	4	Grey, Fine grained, Loosely Packed, Saturated, Sand with shell inclusions.					
				0.0							

GROUNDWATER OBSERVATIONS
 Depth 2.3m Reading 1 Date -

Date logged 24/04/2017
 Logged TM
 Checked

Remarks
 GW62 Terminated at 4.5m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 19/04/2017
 Finished 24/04/2017

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 316541.09 mE 5810957.84 mN
 Orientation Elevation 4.339 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Grading Formations</small>	SAMPLING & TESTING				Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
	Core Loss/Lift <small>0 - 100%</small>	Sample ID	Analysis	PID (ppm)							
NDD	0.05 0.05			260.0 22.5		FILL: Dark Brown, Soft, Moist, Clayey Silt with glass inclusions.		No odour.			
						Brown with Orange Mottles, Low Plasticity, Moist, Sandy Clay with minor organic material.		Suplhur odour.			
	1.00			1.5		1	Dark Brown, Loosely Packed, Dry, Silty Sand with minor gravel, plastic material and brick inclusions.			No odour.	
	1.50 GW65-1.6			60.5 0.0		2	Glass, wire, plastic building material and minor organic material. Brown / Grey, Moist, Silty Sand with glass, bolts, wood, wire and plastic inclusions.				
HSA											
	GW65-3.5			0.0		4	Black, Coarse grained, Loosely Packed, Saturated, Sand with minor clay, ash and shell inclusions.		Organic odour.		
	GW65-4.4			11.8			NATURAL: Grey, Fine to Medium grained, Loosely Packed, Saturated, Sand.				
	GW65-5.0			0.0	5						

DRILL-HOLE LOG ENVIRONMENTAL - FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

GROUNDWATER OBSERVATIONS Depth <u> </u> Reading <u> </u> Date <u> </u> 3.448m 1 -			Date logged 20/04/2017 Logged JL M Checked	Remarks GW65 Terminated at 5.0m - Target Depth NDD = Non Destructive Digging HSA = Hollow Stem Auger	Driller Chadwick Geotechnics Drill Rig Started 12/04/2017 Finished 20/04/2017
Page 1 of 1					

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 316858.86 mE 5812024.37 mN
 Orientation Elevation 2.101 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Forming</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		FILL: Dark Brown, Loosely Packed, Dry, Clayey Silty Gravel, overlain with railway basalt gravel.		No odour.		
	0.50				0.0		Medium to Coarse Sand and organic material.				
	0.60				0.0		Dark Brown, Medium to Coarse grained, Loosely Packed, Dry, Clayey Sand.				
	1.00				0.0	1	Pale Yellow, Medium to Coarse grained, Loosely Packed, Dry, Sand.		No odour.		
	1.50	GW67 1.4				0.0		NATURAL: Brown with Orange Mottles, Fine to Medium grained, Loosely Packed, Dry, Sand. Pale Yellow, Fine to Medium grained, Loosely Packed, Dry, Sand. Becoming Brown and Moist.	No odour. No odour.		
SSA	2.10				0.0	2	Becoming Wet.				
	2.30				0.0						
	3.00				0.0	3	Grey / Orange, Fine to Medium grained, Loosely Packed, Wet, Sand.		No odour.		
	4.00				0.0	4	Minor Shell inclusions.				
	5.00				0.0	5					

GROUNDWATER OBSERVATIONS
 Depth 1.871m Reading 1 Date -

Date logged 20/04/2017
 Logged JLM
 Checked

Remarks
 GW67 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging
 SSA = Solid Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 12/04/2017
 Finished 20/04/2017

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 317043.31 mE 5811774.92 mN
 Orientation Elevation 2.054 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Formings</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0 - 100%				13.2		FILL: Asphalt Roadway.				
					10.1		Brown / Grey, Fine to Medium grained, Sand with brick and rubble inclusions.	No odour.			
					0.80		Dark Brown / Grey, Fine grained, Silty Sand with some organic material.	No odour.			
					1.00		Orange, Fine to Medium grained, Sand.	No odour.			
					1.50		Becoming Mottled.				
					3.2		Pale Grey with Orange Mottles, Fine to Medium grained, Sand. NATURAL: Light Brown, Fine grained, Wet, Sand with some Clay.	No odour.			
					2.0		Becoming Saturated.				
					0.0		Grey, Fine grained, Loosely Packed, Saturated, Sand.				
					3.0		Grey, Soft to Firm, High Plasticity, Saturated, Clay with some Sand.				
					0.0		Grey, Fine grained, Loosely Packed, Saturated, Sand. 20% Shell inclusions.				
HSA											
PT											

GROUNDWATER OBSERVATIONS		
Depth	Reading	Date
1.5m	1	-

Date logged 24/04/2017
 Logged MW
 Checked





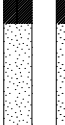
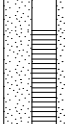
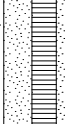
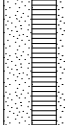
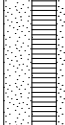
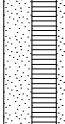
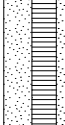
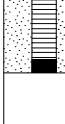
Remarks
 GW70 Terminated at 4.5m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger
 PT = Push Tube

Driller Chadwick Geotechnics
 Drill Rig
 Started 11/04/2017
 Finished 24/04/2017

DRILL-HOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 317213.88 mE 5811273.01 mN
 Orientation Elevation 3.363 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Formings</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		FILL: Brown, Fine to Medium grained, Loosely Packed, Dry, Silty Sand with brick inclusions.		No odour.		
	0.50				0.0		Becoming Dark Brown.				
	0.70				0.0		Becoming Pale Brown, Moist with shell inclusions.				
	1.00				0.0	1			No odour.		
	1.50				0.0		Minor silt. NATURAL: Brown / Orange with Mottles, Fine to Medium grained, Loosely Packed, Moist, Sand.		No odour.		
Sonic	2.00				0.0	2	Becoming Wet with Shell inclusions.				
	2.50				0.0						
	3.00				0.0	3	Becoming Brown, Medium grained.				
	4.00				0.0	4	Becoming Grey, Fine grained.				
	4.50				0.0						
	4.90				0.0	5					

GROUNDWATER OBSERVATIONS
 Depth Reading Date
 2.473m 1 -

Date logged 21/04/2017
 Logged JLM
 Checked

Remarks
 GW72 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging

Driller Chadwick Geotechnics
 Drill Rig
 Started 10/04/2017
 Finished 21/04/2017

DRILL-HOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 317394.88 mE 5811674.82 mN
 Orientation Elevation 2.956 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Formings</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction			
		Sample ID	Analysis	PID (ppm)										
NDD		GW73-0.2			0.0		FILL: Asphalt. Dark Brown with Black / Red Mottles, Stiff, High Plasticity, Dry to Moist, Clay with Gravel.		No odour.					
		GW73-0.5			0.0		Basalt Cobbles and brick inclusions. Brown with Red / Orange Mottles, Soft, Moderate Plasticity, Dry to Moist, Clay with brick fragments and quartz and basalt gravel inclusions.							
		GW73-1.0			1		Becoming Saturated, Low Plasticity with Coarse Basalt Gravel and Cobbles.							
	Sonic		GW73-1.5			0.0						NATURAL: Pale Brown, Fine to Medium grained, Poorly Graded, Loosely Packed, Saturated, Sand.	No odour.	
						2						Becoming Grey.		
			GW73-2.5			0.0						3		Becoming Dark Grey.
			GW73-2.5			0.0						4		Coarse Shell inclusions. Trace of Dark Grey, Soft, Low Plasticity, Clay.
	GW73-4.5			0.0	5	Dark Grey, Fine to Medium grained, Poorly Graded, Loosely Packed, Saturated, Sand with shell inclusions.								

GROUNDWATER OBSERVATIONS
 Depth 2.711m Reading 1 Date -

Date logged 26/04/2017
 Logged MW
 Checked

Remarks
 GW73 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging

Driller Chadwick Geotechnics
 Drill Rig
 Started 26/04/2017
 Finished 26/04/2017

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 317328.25 mE 5811554.10 mN
 Orientation Elevation 3.007 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Formings</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		FILL: Brown, Loosely Packed, Moist, Silty Sand with some organic material.		No odour.		
	0.50 0.60				0.0 0.0		Some Gravel and organic material.		No odour.		
HSA	1.50 GW74-1.5-1.8				0.0 0.0		Brown with Orange Mottles, Low Plasticity, Dry, Clay.		Some discoloured gravels.		
	GW74-1.8-2.0				0.0		Minor Fine grained Sand.				
	GW74-3.0A GW74-3.0B				0.0 0.0		Blue / Green / Brown with Grey Mottles, Moist, Gravel with minor Clay.				
					0.0		Orange, Moist, Sand with minor Grey Clay and with brick and charcoal inclusions.				
					0.0		NATURAL: Grey, Fine grained, Loosely Packed, Moist to Wet, Sand.				
					0.0		Becoming Saturated.				
					0.0		Trace Clay. 50% Shell inclusions.				

GROUNDWATER OBSERVATIONS
 Depth - Reading Date
 2.4m 1 -

Date logged 24/04/2017
 Logged JLM
 Checked

Remarks
 GW74 Terminated at 4.5m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 19/04/2017
 Finished 24/04/2017

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 317364.60 mE 5811316.22 mN
 Orientation Elevation 3.637 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Formings</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		FILL: Grey, Fine grained, Loosely Packed, Dry, Sand with organic material and concrete inclusions.		No odour.		
	0.50				0.0		Brown / Yellow with Mottles, Fine to Medium grained, Loosely Packed, Dry, Clayey Sand.		No odour.		
Sonic	1.00				0.0		Brown / Grey, Fine to Medium, Loosely Packed, Dry, Sandy Silt with ash and charcoal inclusions.				
	1.50				0.0		Dark Brown with Orange Mottles, Loosely Packed, Poorly Sorted, Dry, Silty Sand with brick and coal inclusions.				
	2.00				13.8		Pale Yellow / Orange, Fine to Medium grained, Loosely Packed, Moderately Sorted, Moist to Wet, Sand.		No odour.		
	2.10				0.1						
	2.20				0.0						
	3.00				0.0						
	3.40				0.0		Brick, gravel and minor sand.				
	3.50				0.0		NATURAL: Pale Grey, Fine grained, Loosely Packed, Moderately Sorted, Wet, Sand.				
	4.00				0.0		Minor Silt.				
	4.50				0.0						
	5.00				0.0		Shell inclusions.				

DRILL-HOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

GROUNDWATER OBSERVATIONS Depth <u> </u> Reading <u> </u> Date <u> </u> 2.703m 1 -			Date logged 24/04/2017 Logged JLM Checked	Remarks GW75 Terminated at 5.0m - Target Depth NDD = Non Destructive Digging	Driller Chadwick Geotechnics Drill Rig Started 10/04/2017 Finished 24/04/2017
Page 1 of 1					



LOG OF DRILLHOLE

HOLE IDENTIFICATION

GW76

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 317520.73 mE 5811885.61 mN
 Orientation Elevation 2.263 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Formings</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.20				0.0	FILL: Asphalt Roadway.			No odour.		
					0.20	Brown, Firm, Dry, Gravelly Clay.					
					0.50	Brown with Orange Mottles, Fine to Medium grained, Loosely Packed, Dry, Sand with minor Clay.					
					0.80	Pale Grey, Fine to Medium grained, Loosely Packed, Dry, Sand.					
					1.00	Becoming Light Grey.					
					1.50	Orange / Pale Yellow, Fine to Medium grained, Loosely Packed, Moist, Sand. Brown with Orange Mottles, Medium to Coarse grained, Poorly Sorted, Loosely Packed, Wet, Sand with minor Gravel.					
					2.00						
					2.10	NATURAL: Dark Grey, Medium to Coarse grained, Well Sorted, Loosely Packed, Wet, Sand with minor Silt.					
					2.50	Becoming Grey, Fine to Medium grained.					
					3.00	Becoming Fine grained with Shell inclusions.					
Sonic					4.00	Becoming Pale Grey, Fine to Medium grained.		Slight organic odour.			
					4.50						
					5.00						
					5.00						

DRILL-HOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

GROUNDWATER OBSERVATIONS		
Depth	Reading	Date
1.8m	1	-
1.999m	2	-

Date logged 24/04/2017
 Logged JLM
 Checked

Remarks
 GW76 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging

Driller Chadwick Geotechnics
 Drill Rig
 Started 18/04/2017
 Finished 24/04/2017

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 317518.02 mE 5811734.40 mN
 Orientation Elevation 1.956 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Formings</small>	SAMPLING & TESTING				Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
	Core Loss/Lift <small>0 - 100%</small>	Sample ID	Analysis	PID (ppm)							
NDD		GW77-0.5			0.0	[Cross-hatched pattern]	FILL: Asphalt. Dark Grey, Dense, Dry, Gravel with basalt. Dark Grey, Fine to Medium grained, Loosely Packed, Dry, Sand.		No odour.		[Well construction pattern]
		GW77-1.0			1.0		NATURAL: Pale Grey, Well Graded, Loosely Packed, Dry, Sand.		No odour.		
Sonic		GW77-1.5			2.0	[Dotted pattern]	Light Brown with Mottles, Fine to Medium grained, Poorly Graded, Loosely Packed, Moist, Sand. Pale Brown, Fine to Medium grained, Poorly Graded, Loosely Packed, Wet, Sand. Becoming Light Grey.				
		GW77-2.5			3.0		Becoming Dark Grey. Becoming Saturated with Shell inclusions.				
		GW77-3.5			4.0		Grey, Fine grained, Poorly Graded, Loosely Packed, Saturated, Sand.				
		GW77-4.5			5.0		Shell inclusions. Becoming Dark Grey.				

GROUNDWATER OBSERVATIONS		
Depth	Reading	Date
3.3m	1	-

Date logged 26/04/2017
 Logged MW
 Checked

Remarks
 GW77 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging

Driller Chadwick Geotechnics
 Drill Rig
 Started 26/04/2017
 Finished 26/04/2017

DRILL-HOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 317862.16 mE 5811922.68 mN
 Orientation Elevation 2.058 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Formings</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		FILL: Dark Brown, Fine grained, Loosely Packed, Moist, Silty Sand with organic material, concrete and brick inclusions.		No odour.		
	0.50				0.0		Dark Brown, Fine to medium grained, Loosely Packed, Dry, Silty Sand.		No odour.		
	1.00				0.0		Light Brown, Fine to Medium grained, Loosely Packed, Dry, Clayey Sand with minor gravel.		No odour.		
	1.50				0.0		Large brick fragments. Light Brown, Fine to Medium grained, Loosely Packed, Moist, Sand with minor shell inclusions.		No odour.		
	1.50				0.0		NATURAL: Pale Grey / Yellow, Fine to Medium grained, Loosely Packed, Moist, Sand.		No odour.		
Sonic	2.50				0.0						
	3.00				0.0		Becoming Wet.		No odour.		
	3.50				0.0						
	4.90				0.0		Abundant Shell inclusions.				

GROUNDWATER OBSERVATIONS
 Depth 3m Reading 1 Date -

Date logged 21/04/2017
 Logged JLM
 Checked

Remarks
 GW80 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging

Driller Chadwick Geotechnics
 Drill Rig
 Started 10/04/2017
 Finished 21/04/2017

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 317860.71 mE 5811790.84 mN
 Orientation Elevation 2.408 mAH TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Forming</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		FILL: Dark Brown, Loosely Packed, Moist, Silty Sand with minor Gravel, organic material, concrete and brick inclusions.		No odour.		
	0.50			0.0	Increasing Gravel. Becoming Grey and Dry.		No odour.				
	1.00			0.0	1		Brown / Yellow with Orange Mottles, Dry, Clayey Sand with Gravel.				
	1.50			0.0	2		Brown / Red, Soft, Dry, Clayey Sand with trace Gravel. NATURAL: Light Brown, Fine to Medium grained, Loosely Packed, Moist, Sand.				
	2.50			0.0	3		Becoming Wet.	No odour.			
Sonic	3.50			0.0	4	Becoming Fine grained.		No odour.			
	4.00			0.0	4	Becoming Pale Grey with Shell inclusions.		No odour.			
	GW81 4.9			0.0	5						

GROUNDWATER OBSERVATIONS
 Depth 2.124m Reading 1 Date -

Date logged 21/04/2017
 Logged JLM
 Checked

Remarks
 GW81 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging

Driller Chadwick Geotechnics
 Drill Rig
 Started 10/04/2017
 Finished 21/04/2017

Client Environment Protection Authority
 Project Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates 317326.53 mE 5812100.49 mN
 Orientation Elevation 1.887 mAHD TOC
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Geog. Forming</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		FILL: Dark Brown / Grey, Medium grained, Loosely Packed, Dry, Sand with Gravel.		No odour.		
	0.20				0.0		Brown / Yellow, Fine to Medium grained, Loosely Packed, Dry, Sand with minor ash inclusions.		No odour.		
	0.50				0.0		Becoming Dark Brown / Grey.		No odour.		
	1.00				0.0	1		NATURAL: Brown / Pale Yellow with Mottles, Fine to Medium Grained, Loosely Packed, Dry, Sand.		No odour.	
	1.30				0.0			Pale Yellow with Orange Mottles, Coarse grained, quartzose, Loosely Packed, Dry, Sand.			
	1.50				0.0			Orange / Pale Yellow, Loosely Packed, Moist, Sand.			
	2.00				0.0	2		Pale Grey / Yellow, Fine to Medium grained, Loosely Packed, Wet, Sand.		No odour.	
	2.50				0.0						
	3.00				0.0	3		Becoming Pale Grey.			
	3.50				0.0			Becoming Fine with Shell inclusions.			
Sonic	4.00				0.0	4					
	4.50				0.0						
	4.90				0.0	5					

DRILL-HOLE LOG ENVIRONMENTAL - FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 08/06/17

GROUNDWATER OBSERVATIONS Depth Reading Date 1.59m 2 - 1.641m 1 -			Date logged 24/04/2017 Logged JLM Checked	Remarks GW82 Terminated at 5.0m - Target Depth NDD = Non Destructive Digging	Driller Chadwick Geotechnics Drill Rig Started 12/04/2017 Finished 24/04/2017
Page 1 of 1					



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	289902/288384	<input checked="" type="checkbox"/>
Conductivity	58.6mS/cm	0.0mS/cm	58.6mS/cm	293348	<input checked="" type="checkbox"/>
TDS	36 ppk	0.0ppk	36.0ppk	292262	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0.0ppm in Sodium Sulphite	8.9 ppm Saturation in Air	522	<input checked="" type="checkbox"/>

Check only

Redox (ORP) *	Electrode operability test	240mV +/- 10%	231 mV	001126 / 001127	<input checked="" type="checkbox"/>
---------------	----------------------------	---------------	--------	-----------------	-------------------------------------

* 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 21.1 °C
- Electrodes Cleaned and checked

Tag No: 001301

Valid to: 4/8/17

Date: 4th May 2017

Signed: [Signature]

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>8.2V</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: 5/5/17

Signed: [Signature]

TFS Reference	<u>CM007444</u>	Return Date:	<u> / /</u>
Customer Reference	<u>60537182/35</u>	Return Time:	
Equipment ID	<u>90FLMV Q</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 Malaga WA 6090	

RENTALS

EQUIPMENT CERTIFICATION REPORT

Sample Pro Micro Purge Low-Flow Bladder Sampling Pump

This Pump has been checked as follow

Cleaned / checked Description - MPKIT9 -

Clean and check all components

Date: 4th May 2017

Checked by: PETER

Signature: 

Sent	Received	Returned	Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	QED Sample MicroPurge Pump Serial No: <u>11576</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Operating Field Guide laminated
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Controller ID: <u>QMP100</u> Batt Status <u>3.8v</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Controller Blue Airline Hose
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Blue Airline Hose Quick Connect Fitting for 1/4" Airline
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Tube & Cap
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hanger Cable S/steel, length <u>65 m</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hanger Cable Clamp – Black with Orange Tip
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Controller Instructions inside case
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Compressor ID: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Comp connecting Hose & Push lock fittings
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gas Bottle CO2 ID: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CO2D Gas Regulator ID: <u>00</u> in Carry Case
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CO2D Cylinder Gas Regulator Shift Spanner
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gas Bottle Trolley
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cylinder weight... Without Trolley <u>17.0</u> KG
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Flow Cell ID: <u>EFL500</u> With Lid: Yes/No
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare Disposable Bladders, qty <u>2</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare Accessories Jar
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Processors Signature/ Initials

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.**

TFS Reference	<u>CM007444</u>	Return Date:
Customer Reference	<u>60537182/3.5</u>	Return Time:
Equipment ID	<u>MPKIT9-</u>	Condition on return:
Equipment Serial No.		

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Phone: (Free Call) 1300 735 295		Fax: (Free Call) 1800 675 222		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 Majega WA 6080	

RENTALS

Equipment Report – Solinst Model 122 Interface Meter

This Meter has been performance checked / calibrated* as follows:

Cleaned/Tested Pass? Yes No

Probe


Tape/Reel

Performance Test & Battery Voltage Check (8-8v) 8.0v minimum

Date: 5th May 2017 Checked by: PETER

Signed: 

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$20 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	Received	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operations check OK
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Plastic Box / Bag
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare 9V Battery Qty <u>1</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probe Cleaning Brush
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Decon
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Instruction leaflet
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tape Guide
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Processors Signature/ Initials			<u></u>

Quote Reference	<u>CM007444</u>	Condition on return
Customer Ref	<u>60537182/3.5</u>	
Equipment ID	<u>80 Meter SOL122 -60 (60M)</u>	
Equipment serial no.		
Return Date	<u>/ /</u>	
Return Time		

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RENTALS

Equipment Report – Solinst Model 122 Interface Meter

This Meter has been performance checked / calibrated* as follows:

Cleaned/Tested Pass? Yes No

Probe

Tape/Reel

Performance Test & Battery Voltage Check (8.7 v) 8.0v minimum

Date: 08/05/2017 Checked by: Farzana

Signed: FM

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$20 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	Received	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operations check OK
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Plastic Box / Bag
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare 9V Battery Qty <u>1</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probe Cleaning Brush
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Decon
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Instruction leaflet
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tape Guide
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Processors Signature/ Initials			<u>FM</u>

Quote Reference	<u>CM007444</u>	Condition on return
Customer Ref	<u>60537182/3.5</u>	
Equipment ID	<u>80 Meter SOL122-32</u>	
Equipment serial no.		
Return Date	<u>/ /</u>	
Return Time		

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RENTALS

Equipment Report - MiniRAE 3000 PID

This Gas Meter has been performance checked and calibrated as follows:

Lamp	Compound	Concentration	Zero	Span	Traceability Lot #	Pass?
10.6 eV	Isobutylene	100 ppm	0 ppm	100 ppm	205276	<input checked="" type="checkbox"/>

Alarm Limits

High	100 ppm
Low	50 ppm

Bump Test

Date	Target Gas	Reading	Pass?
4/05	100 ppm	100.2 ppm	<input checked="" type="checkbox"/>

- Battery Status 100%
- 10 minutes test complete
- Spare battery status (Min 5.5 volts)
- Electrical Safety Tag attached (AS/NZS 3760)

- Performance check (pump, lamp, sensor)
- Data cleared
- Filters checked

Tag No: 001044

Valid to: 23.06.2017

Date: 5th MAY 2017

Signed: Mimjo

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"/>	MiniRAE 2000 PID / Operational Check / Battery Status <u>100%</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lamp <u>10.6</u> eV, Compound Set to: <u>Isobutylene</u> / factor: <u>1.1</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Protective yellow rubber boot
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Inlet probe (attached to PID)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare water trap filter(s) Qty <u>03</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Charger 240V to 12V1250mA
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cradle and Travel Charger
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual behind foam on the lid of case "
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide Sheet behind foam on the lid of case "
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare Alkaline Battery Compartment with batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Inline Moisture trap Filter Guide Laminated
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration regulator & tubing (optional)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Data cable and Software CD (optional)
<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: 5th MAY 2017

Signed: Mimjo

TFS Reference	<u>CM007444</u>	Return Date:	<u>/ /</u>
Customer Reference	<u>60537182/35</u>	Return Time:	
Equipment ID	<u>PID3000-68</u>	Condition on return:	
Equipment Serial No.			

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Equipment Certification Report

Water Quality Meter Calibration Kit

Instrument

- TPS 90FL
- AquaREAD
- SmarTROLL
- AquaTROLL 600

Solutions

- pH Buffer 4.00 pH 6.88 pH 7.00 pH
- Conductivity 1413 μ S/cm 2570 μ S/cm 2760 μ S/cm 12.88 mS/cm 58.6 mS/cm
- TDS 2.00 ppk 36.00 ppk
- DO 0.00 ppm
- ORP 240 mV at 25°C
- Turbidity 0.0 NTU 360 NTU 1000 NTU
- Distilled Water Distilled Water

NOTE: Traceability lot numbers as per water quality meter calibration certificate.

Sent	Return	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 ml Bottle with lid – Qty: 6
<input checked="" type="checkbox"/>	<input type="checkbox"/>	MSDS for selected solutions
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Carry Case

Date: 15th MAY 2017

Signed: 

TFS Reference	<u>CMA07499</u>	Return Date and Time:
Customer Reference	<u>60537132/3.5</u>	Condition on return:
Equipment ID	<u>90FLCALKIT</u>	
Equipment Serial No.		

Please check that all items are received and advise if otherwise as soon as possible.
All items must be cleaned and decontaminated before return.
A minimum cleaning/repair charge may apply to any unclean or damaged items.
Items not returned or not repairable will be charged at the full replacement cost.

Phone: 1300 735 295		Fax: 1800 675 123		Email: RentalsAU@Thermofisher.com	
Melbourne 5 Caribbean Drive Scoresby VIC 3179	Sydney Unit 5, 4 Talavera Road North Ryde NSW 2113	Adelaide 33 King Street Norwood SA 5067	Brisbane Unit 2/5 Ross Street Newstead QLD 4006	Perth 121 Beringarra Avenue Malaga WA 6090	

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Fishermens Bend	Project Number:	60537182
Project Location:	Employment Precinct	Client:	EPA
PM Name:	Averyll Coyne	Fieldwork Staff Name:	Megan Williams / Jacob Muller

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Thermo
Make and Model:	
Serial Number:	90FIMVQ

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	10.5.17 700				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	6.88	4.00	58.6 µm	0.00	
Bump Test Reading:	6.73	3.94	58.6	0.00	
Bump Test Temperature:	14.6	14.6	14.6	14.6	

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

ORP Standard at 240mV, Bump @ 252

Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

_____ **Fieldwork Staff Signature** _____ **Date**

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Fishermens Bend	Project Number:	60537182
Project Location:	Employment Precinct	Client:	EPA
PM Name:	Averyll Coyne	Fieldwork Staff Name:	Megan Williams / Jacob Muller

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	ThermoFisher
Make and Model:	90 FLMVSC
Serial Number:	

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	10/5/17 7:40				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	6.88	58.3	0.00	
Calibration Reading:					
Calibration Temperature:					

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	10/5/17 7:40				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	6.88	58.3	0.00	
Bump Test Reading:	4.07	6.76	57.2	-0.12	
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

ORP 240v Bump @ 257

Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Jacob Muller

10/5/17

Fieldwork Staff Signature

Date

Distribution: Project Central File

ANZ

FQM - Gas Monitoring Calibration Record

Q4AN(EV)-003-FM1

Project Name:	Fishermens Bend	Project Number:	60537182
Project Location:	Employment Precinct	Client:	EPA
PM Name:	Averyll Coyne	Fieldwork Staff Name:	Megan Williams / Jacob Muller

This calibration record is intended to prompt fieldwork staff to calibrate various gas instruments (PID, LEL, Landfill gas meters) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	ThermoFisher		
Make and Model:	PGM 7320	MiniRae 3000	
Serial Number:	592-916977		
For PID - Lamp Photon Energy (eV):			

CALIBRATION

Calibration (Span) Gas:	ISOBUTYLENE		
Batch Number:	150103-2	1869107	
Expiry Date:			
Concentration (ppm or % v/v):			

CALIBRATE WITH SPAN GAS

Calibration Date:	9/5/17	10/5/17	11/5/17	12/5/17
Calibration Time:	7:24	7:45	7:15	7:15
Fresh Air Calibration Reading (ppm or % v/v):	0.00	0.00	0.0	0.0
Calibration Reading (ppm or % v/v):	100.00	100	100	

CORRECTION FACTOR

The project HSEP provides the target compound/s of interest and should include the appropriate correction factor to be used for the PID.

Target Compound/s:	Isobutylene
Correction Factor:	

BUMP TEST WITH SPAN GAS

Time:	7:30	7:50	7:20	7:30
Bump Test Reading (ppm):	107	100	100	120

ALARM LEVELS

The project HSEP provides actions levels for the target compound/s of interest and the instrument should be set up with high and low level alarms based on the action level concentrations where required.

High Level Alarm (ppm or % v/v):	100
Low Level Alarm (ppm or % v/v):	50

TEST ALARMS BY BUMP TEST

Time:	7:30	7:50	7:20
Alarms Activated at Low Level (Y/N):	Y	Y	Y

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

Fieldwork Staff Signature

9.5.17

Date

Distribution: Project Central File

ANZ

FQM - Gas Monitoring Calibration Record

Q4AN(EV)-003-FM1

Project Name:	Fishermens Bend	Project Number:	60537182
Project Location:	Employment Precinct	Client:	EPA
PM Name:	Averyll Coyne	Fieldwork Staff Name:	Megan Williams / Jacob Muller

This calibration record is intended to prompt fieldwork staff to calibrate various gas instruments (PID, LEL, Landfill gas meters) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	ThermoFisher
Make and Model:	PGM 7320
Serial Number:	592-916762
For PID - Lamp Photon Energy (eV):	10.6

CALIBRATION

Calibration (Span) Gas:	ISOBUTYLENE
Batch Number:	150103-2 1869107
Expiry Date:	JUN 2018
Concentration (ppm or % v/v):	100 ppm

CALIBRATE WITH SPAN GAS

Calibration Date:	10/8/17	11/5/17	12/5/17		
Calibration Time:	7:30	7:10	7:00		
Fresh Air Calibration Reading (ppm or % v/v):	0.00	0.01	0.00		
Calibration Reading (ppm or % v/v):	100.0		100.00		

CORRECTION FACTOR

The project HSEP provides the target compound/s of interest and should include the appropriate correction factor to be used for the PID.

Target Compound/s:	ISOBUTYLENE
Correction Factor:	

BUMP TEST WITH SPAN GAS

Time:	7:35	7:15	7:00		
Bump Test Reading (ppm):	100.0	100.00	400		

ALARM LEVELS

The project HSEP provides actions levels for the target compound/s of interest and the instrument should be set up with high and low level alarms based on the action level concentrations where required.

High Level Alarm (ppm or % v/v):	100	100	100
Low Level Alarm (ppm or % v/v):	50	50	50

TEST ALARMS BY BUMP TEST

Time:					
Alarms Activated at Low Level (Y/N):	YES	YES	YES		

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

Jacob Muller
Fieldwork Staff Signature

10/5/17
Date

Distribution: Project Central File

RENTALS

EQUIPMENT CERTIFICATION REPORT

Sample Pro Micro Purge Low-Flow Bladder Sampling Pump

This Pump has been checked as follows:

Cleaned / checked Description - MPKIT 3 -
 Clean and check all components
 Date: 10th May, 2017.

Checked by: PETER

Signature: 

Sent	Received	Returned	Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	QED Sample MicroPurge Pump Serial No: <u>11576</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Operating Field Guide laminated
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Controller ID: <u>QMP10Y</u> Batt Status <u>3.6v</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Controller Blue Airline Hose
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Blue Airline Hose Quick Connect Fitting for 1/4" Airline
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Tube & Cap
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hanger Cable S/steel, length <u>65 m</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hanger Cable Clamp – Black with Orange Tip
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Controller Instructions inside case
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Compressor ID: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Comp connecting Hose & Push lock fittings
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gas Bottle CO2 ID: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CO2D Gas Regulator ID: <u>DM</u> in Carry Case
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CO2D Cylinder Gas Regulator Shift Spanner
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gas Bottle Trolley
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cylinder weight... Without Trolley <u>17.0</u> KG
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Flow Cell ID: <u>EFC500Q</u> With Lid: <u>Yes</u> /No
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare Disposable Bladders, qty <u>2</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare Accessories Jar
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Processors Signature/ Initials

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.**

TFS Reference	<u>CM007480</u>	Return Date:
Customer Reference	<u>6053782/3.5</u>	Return Time:
Equipment ID	<u>MPKIT 3</u>	Condition on return:
Equipment Serial No.		

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RENTALS

Equipment Report - MiniRAE 3000 PID

This Gas Meter has been performance checked and calibrated as follows:

Lamp	Compound	Concentration	Zero	Span	Traceability Lot #	Pass?
10.6 eV	Isobutylene	100 ppm	0 ppm	100 ppm	205276	<input checked="" type="checkbox"/>

Alarm Limits

High	100 ppm
Low	50 ppm

Bump Test

Date	Target Gas	Reading	Pass?
	100 ppm	101 ppm	<input checked="" type="checkbox"/>

- Battery Status 100%
- 10 minutes test complete
- Spare battery status (Min 5.5 volts)
- Electrical Safety Tag attached (AS/NZS 3760)

- Performance check (pump, lamp, sensor)
- Data cleared
- Filters checked

Tag No: 001314

Valid to: 10-08-2017

Date: 10th MAY 2017

Signed: Munjo

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"/>	MiniRAE 2000 PID / Operational Check / Battery Status <u>100%</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lamp <u>10.6</u> eV, Compound Set to: <u>Isobutylene</u> C/factor: <u>1.1</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Protective yellow rubber boot
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Inlet probe (attached to PID)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare water trap filter(s) Qty <u>03</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Charger 240V to 12V/1250mA
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cradle and Travel Charger
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual behind foam on the lid of case "
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide Sheet behind foam on the lid of case "
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare Alkaline Battery Compartment with batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Inline Moisture trap Filter Guide Laminated
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration regulator & tubing (optional)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Data cable and Software CD (optional)
<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: 10th MAY 2017

Signed: Munjo

TFS Reference	<u>CM007480</u>	Return Date:	/ /
Customer Reference	<u>60537182/35</u>	Return Time:	
Equipment ID	<u>PID3000-50</u>	Condition on return:	
Equipment Serial No.			

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RENTALS

Equipment Report – Solinst Model 122 Interface Meter

This Meter has been performance checked / calibrated* as follows:

Cleaned/Tested Pass? Yes No

Probe

Tape/Reel

Performance Test & Battery Voltage Check (8.3 v) 8.0v minimum

Date: 10/05/2017 Checked by: Farzana

Signed: FM

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$20 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	Received	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operations check OK
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Plastic Box / Bag
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare 9V Battery Qty <u>1</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probe Cleaning Brush
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Decon
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Instruction leaflet
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tape Guide
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Processors Signature/ Initials			<u>FM</u>

Quote Reference	<u>CM007480</u>	Condition on return
Customer Ref	<u>60537182/3.5</u>	
Equipment ID	<u>80 Meter SOL122-59</u>	
Equipment serial no.		
Return Date	<u>/ /</u>	
Return Time		

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ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Fishermens Bend	Project Number:	60537182
Project Location:	Employment Precinct	Client:	EPA
PM Name:	Averyll Coyne	Fieldwork Staff Name:	Megan Williams / Jacob Muller

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	ThermoFisher
Make and Model:	90FLMVSC
Serial Number:	

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	11/5/17				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	6.88	4.00	58.60	0.00	
Bump Test Reading:	6.97	4.41	383	-0.13	
Bump Test Temperature:	10.40	10.40	10.40	10.40	

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Conductivity STD 240 Bump @ 265

Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Jacob Muller
Fieldwork Staff Signature

11/5/17
Date

Distribution: Project Central File

ANZ
FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Fishermens Bend	Project Number:	60537182
Project Location:	Employment Precinct	Client:	EPA
PM Name:	Averyll Coyne	Fieldwork Staff Name:	Megan williams / Jacob Muller / Navjot Kaur

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	ThermoFisher
Make and Model:	TPS 90FLMVA
Serial Number:	90FLMVA

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	12/5/17				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.0	6.88	58.6	0.0	240
Calibration Reading:					
Calibration Temperature:					

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	12/5/17				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	ms µS/cm / cm	ppm	ppm
Calibration Standard Concentration:	4.0	6.88	58.6	0.0	240
Bump Test Reading:	4	6.86	60	-0.05	259
Bump Test Temperature:	10.6°C				

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

_____ **Fieldwork Staff Signature** _____ **Date** _____

Distribution: Project Central File

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	289902/288384	<input checked="" type="checkbox"/>
Conductivity	58.6mS/cm	0.0mS/cm	58.6mS/cm	301120	<input checked="" type="checkbox"/>
TDS	36 ppk	0.0 ppk	36.0ppk	292262	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0.0ppm in Sodium Sulphite	9.4 ppm Saturation in Air	084	<input checked="" type="checkbox"/>

Check only

Redox (ORP) *	Electrode operability test	240mV +/- 10%	236 mV	OC1126/OC1127	<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 18.2 °C
 Electrodes Cleaned and checked

Tag No: 001323

Valid to: 15/8/17

Date: 15th May 2017

Signed: [Signature]

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>8.3v</u>
<input type="checkbox"/>	<input type="checkbox"/>	pH sensor with wetting cap, 5m
<input type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS/Temperature K=10 sensor, 5m
<input type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen YSI5739 sensor with wetting cap, 5m
<input type="checkbox"/>	<input type="checkbox"/>	Redox (ORP) sensor with wetting cap, 5m
<input type="checkbox"/>	<input type="checkbox"/>	Power supply 240V to 12V DC 200mA
<input type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input type="checkbox"/>	<input type="checkbox"/>	Syringe with storage solution for pH and ORP sensors
<input type="checkbox"/>	<input type="checkbox"/>	Carry Case
<input type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 15th MAY 2017

Signed: [Signature]

TFS Reference	<u>cm007499</u>	Return Date:	/ /
Customer Reference	<u>603718213.5</u>	Return Time:	
Equipment ID	<u>90FLMV mc</u>	Condition on return:	
Equipment Serial No.			

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RENTALS

Equipment Report - MiniRAE 3000 PID

This Gas Meter has been performance checked and calibrated as follows:

Lamp	Compound	Concentration	Zero	Span	Traceability Lot #	Pass?
10.6 eV	Isobutylene	100 ppm	0 ppm	100 ppm	205276	<input checked="" type="checkbox"/>

Alarm Limits

High	100 ppm
Low	50 ppm

Bump Test

Date	Target Gas	Reading	Pass?
15/5	100 ppm	100.1 ppm	<input checked="" type="checkbox"/>

- Battery Status 100%
- 10 minutes test complete
- Spare battery status (Min 5.5 volts)
- Electrical Safety Tag attached (AS/NZS 3760)

- Performance check (pump, lamp, sensor)
- Data cleared
- Filters checked

Tag No: 001036

Valid to: 16-06-2017

Date: 15th MAY 2017

Signed: Mundo

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"/>	MiniRAE 2000 PID / Operational Check / Battery Status <u>100%</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lamp <u>10.6</u> eV, Compound Set to: <u>Isobutylene</u> C/factor: <u>1.1</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Protective yellow rubber boot
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Inlet probe (attached to PID)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare water trap filter(s) Qty <u>03</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Charger 240V to 12V1250mA
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cradle and Travel Charger
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual behind foam on the lid of case "
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide Sheet behind foam on the lid of case "
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare Aikaline Battery Compartment with batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Inline Moisture trap Filter Guide Laminated
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration regulator & tubing (optional)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Data cable and Software CD (optional)
<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: 15th MAY 2017

Signed: Mundo

TFS Reference	<u>CM007499</u>	Return Date:	<u>/ /</u>
Customer Reference	<u>60537182/35</u>	Return Time:	
Equipment ID	<u>PID3000-59</u>	Condition on return:	
Equipment Serial No.			

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RENTALS

EQUIPMENT CERTIFICATION REPORT

Sample Pro Micro Purge Low-Flow Bladder Sampling Pump

This Pump has been checked as follows:

<u>Cleaned / checked</u>	<u>Description</u>
<input checked="" type="checkbox"/>	Clean and check all components

Date: 15/05/2017

Checked by: Farzana

Signature: FM

Sent	Received	Returned	Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	QED Sample MicroPurge Pump Serial No: <u>11561</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Operating Field Guide laminated
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Controller ID: <u>QMP10R</u> Batt Status <u>3.5V</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Controller Blue Airline Hose
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Blue Airline Hose Quick Connect Fitting for 1/4" Airline
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Tube & Cap
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hanger Cable S/steel, length <u>65</u> m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hanger Cable Clamp – Black with Orange Tip
<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gas Bottle CO2 ID: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CO2D Gas Regulator ID: <u>DP</u> in Carry Case
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CO2D Cylinder Gas Regulator Shift Spanner
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gas Bottle Trolley
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cylinder weight... Without Trolley <u>16</u> KG
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Flow Cell ID: <u>EFC500V</u> With Lid: Yes/No
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare Disposable Bladders, qty <u>2</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare Accessories Jar
	<u>FM</u>		Processors Signature/ Initials

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.**

TFS Reference	<u>CM007499</u>	Return Date:
Customer Reference	<u>60537182/3.5</u>	Return Time:
Equipment ID	<u>MPKIT-5</u>	Condition on return:
Equipment Serial No.		

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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	289902/288384	<input checked="" type="checkbox"/>
Conductivity	58.6mS/cm	0.0mS/cm	58.6mS/cm	301120	<input checked="" type="checkbox"/>
TDS	36 ppk	0.0 ppk	36.0ppk	292262	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0.0ppm in Sodium Sulphite	8.7 ppm Saturation in Air	084	<input checked="" type="checkbox"/>

Check only

Redox (ORP) *	Electrode operability test	240mV +/- 10%	242 mV	OC1126/OC1127	<input checked="" type="checkbox"/>
---------------	----------------------------	---------------	--------	---------------	-------------------------------------

* This meter uses an Ag/AgCl ORP electrode. To convert readings to SHE (Standard Hydrogen Electrode), add 199mV to the mV reading.

- Battery Status 8.1v (min 7.2V)
 Temperature 18.1 °C
 Electrical Safety Tag attached (AS/NZS 3760)
 Electrodes Cleaned and checked

Tag No: 001040

Valid to: 26/7/17

Date: 15th May 2017

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: _____
<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: 15th MAY 2017

Signed: _____

TFS Reference	<u>CM007699</u>	Return Date:	/ /
Customer Reference	<u>6037182/35</u>	Return Time:	
Equipment ID	<u>90FLMV N</u>	Condition on return:	
Equipment Serial No.			

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RENTALS

EQUIPMENT CERTIFICATION REPORT

Sample Pro Micro Purge Low-Flow Bladder Sampling Pump

This Pump has been checked as follows:

Cleaned / checked Description MPKIT-11

Clean and check all components

Date: 15th MAY 2017

Checked by: MINTO

Signature: *Minto*

Sent	Received	Returned	Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	QED Sample MicroPurge Pump Serial No: <u>12646</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Operating Field Guide laminated
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Controller ID: <u>QMP107</u> Batt Status <u>3.5V</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Controller Blue Airline Hose
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Blue Airline Hose Quick Connect Fitting for 1/4" Airline
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump Tube & Cap
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hanger Cable S/steel, length <u>65</u> m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hanger Cable Clamp – Black with Orange Tip
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Controller Instructions inside case
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Compressor ID: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Comp connecting Hose & Push lock fittings
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gas Bottle CO2 ID: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CO2D Gas Regulator ID: <u>CO2DK</u> in Carry Case
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CO2D Cylinder Gas Regulator Shift Spanner
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gas Bottle Trolley
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cylinder weight... Without Trolley <u>16</u> KG
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Flow Cell ID: <u>EFC5007</u> With Lid: Yes/No
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare Disposable Bladders, qty <u>02</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare Accessories Jar
<u><i>Minto</i></u>			Processors Signature/ Initials

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.**

TFS Reference	<u>CM007499</u>	Return Date:
Customer Reference	<u>60537182/3.5</u>	Return Time:
Equipment ID	<u>MPKIT-11</u>	Condition on return:
Equipment Serial No.		

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RENTALS

Equipment Report – Solinst Model 122 Interface Meter

This Meter has been performance checked / calibrated* as follows:

Cleaned/Tested Pass? Yes No

Probe

Tape/Reel

Performance Test & Battery Voltage Check (8.2v) 8.0v minimum

Date: 15/05/2017 Checked by: Farzana

Signed: FM

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$20 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	Received	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operations check OK
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Plastic Box / Bag
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare 9V Battery Qty <u>1</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probe Cleaning Brush
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Decon
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Instruction leaflet
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tape Guide
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Processors Signature/ Initials			<u>FM</u>

Quote Reference	<u>0007499</u>	Condition on return
Customer Ref	<u>60537182/3.5</u>	
Equipment ID	<u>80 Meter SOL122-58</u>	
Equipment serial no.		
Return Date	<u>/ /</u>	
Return Time		

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RENTALS

Equipment Report – Solinst Model 122 Interface Meter

This Meter has been performance checked / calibrated* as follows:

- Cleaned/Tested** **Pass?** **Yes** **No**
- Probe
 - Tape/Reel
 - Performance Test & Battery Voltage Check (9.5v) 8.0v minimum

Date: 15/05/2017 Checked by: Farzana

Signed: FM

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$20 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	Received	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operations check OK
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Plastic Box / Bag
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spare 9V Battery Qty <u>1</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probe Cleaning Brush
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Decon
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Instruction leaflet
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tape Guide
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Processors Signature/ Initials			<u>FM</u>

Quote Reference	<u>0007499</u>	Condition on return
Customer Ref	<u>60537182/3.5</u>	
Equipment ID	<u>80 Meter SOL122-34</u>	
Equipment serial no.		
Return Date	<u> / / </u>	
Return Time		

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FQM - Gas Monitoring Calibration Record

Q4AN(EV)-003-FM1

Project Name:	Fishermens Bend Employmnt Precinct	Project Number:	60537182
Project Location:	Fishermens Bend, various	Client:	EPA
PM Name:	Averyll Coyne	Fieldwork Staff Name:	Navjot Kaur

This calibration record is intended to prompt fieldwork staff to calibrate various gas instruments (PID, LEL, Landfill gas meters) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	
Make and Model:	Thermo
Serial Number:	Minid Rae 2000 PID 3000-46
For PID - Lamp Photon Energy (eV):	

CALIBRATION

Calibration (Span) Gas:	Isobutylene
Batch Number:	ISO 103-2
Expiry Date:	JUN 2018
Concentration (ppm or % v/v):	100 ppm

CALIBRATE WITH SPAN GAS

Calibration Date:	17-5-17			
Calibration Time:	7:45			
Fresh Air Calibration Reading (ppm or % v/v):	6.0			
Calibration Reading (ppm or % v/v):	100			

CORRECTION FACTOR

The project HSEP provides the target compound/s of interest and should include the appropriate correction factor to be used for the PID.

Target Compound/s:	
Correction Factor:	

BUMP TEST WITH SPAN GAS

Time:	7:50			
Bump Test Reading (ppm):	104			

ALARM LEVELS

The project HSEP provides actions levels for the target compound/s of interest and the instrument should be set up with high and low level alarms based on the action level concentrations where required.

High Level Alarm (ppm or % v/v):	100
Low Level Alarm (ppm or % v/v):	50

TEST ALARMS BY BUMP TEST

Time:	7:50			
Alarms Activated at Low Level (Y/N):				

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution


Fieldwork Staff Signature

17-5-17
Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Fishermens Bend	Project Number:	60537182
Project Location:	Employment Precinct	Client:	EPA
PM Name:	Averyll Coyne	Fieldwork Staff Name:	Megan Williams / Jacob Muller

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Thermo
Make and Model:	
Serial Number:	90 FLMVC

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	17.5.17				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	6.84	4.00	58 mS/cm	0.0	
Bump Test Reading:	7.5 6.70	4.11	60	0.01	
Bump Test Temperature:	13.8				

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

ORx standard 240 mV
bump @ 250

Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature	Date
---------------------------	------

Distribution: Project Central File



Appendix G

Well Development Forms

GW67

2/5/17

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087	V
Recorded / Developed By:	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:	
Date:	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:	

Well Purging

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 4.038	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC): 1.727	Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC):
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$(4.038 - 1.727) \times (50 / 12)^2 \times 0.00314 = 4.54 \quad 4 \times 4.54 = 18.14$$

TD	WL	D	1 BV (L)	BV	# VOLS	Purge Volume (L)
----	----	---	----------	----	--------	------------------

Start: 9:35 Stop: 10:05 Elapsed: 40 mins Initial depth to water: 1.729
 Final depth to water: 1.808

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
9:35	0							1.723	
9:38	3	2	0.05	1518	7.37	-76	17.00	1.788	
9:41	6	4	0.01	1545	7.33	-91	18.5	1.788	
9:44	9	6	0.04	1583	7.29	-90	19.00	1.808	
9:47	12	8	0.06	1568	7.23	-96	19.00	1.808	
9:50	15	10	0.03	1547	7.02	-96	19.00	1.808	
9:53	18	12	0.02	1492	6.93	-94	19.00	1.808	
9:56	21	14	0.03	1467	6.96	-96	19.00	1.808	
9:59	24	16	0.02	1455	6.95	-104	19.00	1.808	
10:02	27	18	0.05	1462	6.94	-102	19.00	1.808	
10:05	30	20	0.03	1478	6.99	-96	18.80	1.808	

Groundwater equilibrium reached at ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C (3 consecutive measurements)

Observations at start of development (turbidity, colour, odour, sheen): Turbid, slight hydrocarbon odour, no sheen

Observations at end of development (turbidity, colour, odour, sheen): Clear, no sheen or odour

Volume of water actually purged during development: 20 L

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:

GW82

2/5/17

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087
Recorded / Developed By: (Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:
Date:	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:

Well Purging

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 4.558	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC): 1.516	Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC):
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$(4.558 - 1.516) \times (50 / 12)^2 \times 0.00314 = \frac{5.970}{5.970} \times 4 \times 5.970 = 23.88$$

TD WL D 1 BV (L) BV # VOLS Purge Volume (L)

Start: 11:42 Stop: 12:18 Elapsed: 36 mins Initial depth to water: 1.516
 Final depth to water: 1.565

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
11:45	0	0						1.515	
11:48		2	0.41	2617	7.20	-93	18.60	1.564	
11:51		4	0.07	2790	7.25	-112	18.90	1.562	
11:54		6	0.06	2600	7.23	-131	18.70	1.565	
11:57		8	0.02	2730	7.24	-132	18.70	1.565	
12:00		10	0.07	2670	7.25	-141	18.70	1.565	
12:03		12	0.06	2670	7.25	-147	18.80	1.565	
12:06		14	0.06	2710	7.22	-149	18.80	1.565	
12:09		16	0.06	2610	7.21	-144	18.50	1.561	
12:12		18	0.14	2610	7.16	-144	18.10	1.566	
12:18		24	0.11	2820	7.15	-141	18.10	1.565	
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)	

Observations at start of development (turbidity, colour, odour, sheen): low turbidity, no colour, no sheen

Observations at end of development (turbidity, colour, odour, sheen): as above

Volume of water actually purged during development:

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:

not stable purged

3/16/17

2/5/17

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087
Recorded / Developed By:	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:
Date: / /	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:

Well Purging

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 3.978	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC): 2.287	Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC):
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$(3.978 - 2.287) \times (50 / 12)^2 \times 0.00314 = 3.319 \quad 4 \times 3.319 = 13.30$$

TD WL D 1 BV (L) BV # VOLS Purge Volume (L)

Start: 1:28 Stop: 1:52 Elapsed: 24 mins Initial depth to water:
 Final depth to water: 2.321

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
1:31 pm	0	0						2.305	
1:34	3	2	0.36	4880	6.75	-126	19.10	2.321	
1:37	6	4	0.05	4820	6.81	-141	20.00	2.321	
1:40	9	6	0.01	4820	6.81	-142	20.00	2.321	
1:43	12	8	0.01	4880	6.80	-144	20.10	2.321	
1:46	15	10	0.01	4,880	6.79	-145	20.10	2.321	
1:49	18	12	0.03	4,890	6.79	-146	20.20	2.321	
1:52	21	14	0.05	4,760	6.81	-146	20.20	2.321	

Groundwater equilibrium reached at ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C (3 consecutive measurements)

Observations at start of development (turbidity, colour, odour, sheen): Very turbid, garbage odour, no sheen

Observations at end of development (turbidity, colour, odour, sheen): moderate turbid garbage odour no sheen

Volume of water actually purged during development: 14 L

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:

GW 62

1/5/17

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087	Well No: _____
Recorded / Developed By: _____	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:	
Date: _____	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:	

Well Purgig

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 4.232	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC): 1.561	Pump Intake Setting (if pump used): _____
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC): _____
	Screen Interval (m BTOC) Top: _____ Bottom: _____

Anticipated Approximate Purge Volume Calculation

$(4.232 - 1.561) \times (50 / 12)^2 \times 0.00314 = 5.24$ 4 x 5.24 = 20.96

TD WL D 1 BV (L) BV # VOLS Purge Volume (L)

Start: 3:24 Stop: 4:00 Elapsed: 36 mins Initial depth to water: 1.561

Final depth to water: 1.675

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
3:24	0	0						1.561	
3:27	3	2	2.60	3670	10.65	57	18.90	1.653	
3:30	6	4	2.44	3840	8.81	40	18.70	1.663	
3:33	9	6	2.65	2581	9.92	32	18.70	1.665	
3:36	12	8	2.47	3660	6.67	12	18.70	1.660	
3:39	15	10	2.39	3680	7.47	23	18.50	1.662	
3:42	18	12	2.44	3550	6.82	1	18.60	1.664	
3:45	21	14	2.51	3110	6.62	-14	18.60	1.662	
3:47	24	16	2.14	3000	6.76	-28	18.70	1.663	
3:50	27	18	2.09	3000	9.65	-16	18.60	1.668	
Parameters		not	stable	22L	Purged				
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)	

Observations at start of development (turbidity, colour, odour, sheen): moderate turbidity, no odour / sheen

Observations at end of development (turbidity, colour, odour, sheen): low turbidity, no odour, no sheen

Volume of water actually purged during development: _____

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:

GWS2 - 24/4/17

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment			Project Number: 60431087			Well No:			
Recorded / Developed By:			Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:						
Date: ?			Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:						
Well Purging									
Well Details				Development Method					
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:				<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water					
Total Depth of Well (TD in m BTOC):				<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input type="checkbox"/> Other: Peristaltic					
Water Level Depth (WL in m BTOC):				Pump Intake Setting (if pump used):					
Number of bore volumes to be purged (# VOLS)				Depth pump set (m BTOC):					
<input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:				Screen Interval (m BTOC) Top: Bottom:					
Anticipated Approximate Purge Volume Calculation									
$\left(\frac{\text{TD} - \text{WL}}{D} \right) \times \left(\frac{D}{2} \right)^2 \times 0.00314 = \text{BV} \times \text{\# VOLS} = \text{Purge Volume (L)}$									
TD	WL	D	1 BV (L)	BV	# VOLS	Purge Volume (L)			
Start: Stop: Elapsed: Initial depth to water:			Final depth to water:						
Field Parameter Measurements <input checked="" type="checkbox"/> Required <input type="checkbox"/> Not required									
Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
11:45		1	1.49	16963	6.32	52.3	21.54	2.380	
11:55		8	1.89	13431	6.82	15.1	21.50	2355	
12:00		15	1.90	1422	6.79	20.4	21.29	2244	
12:10		22	2.20	1469	6.94	25.3	22.35	2242	
12:15		29	2.60	1428	6.88	21.5	20.89	2243	
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)	
Observations at start of development (turbidity, colour, odour, sheen): Dark Grey / nil / nil High Turb									
Observations at end of development (turbidity, colour, odour, sheen): med Turb / light Grey / nil / nil									
Volume of water actually purged during development: 30 Lts									
Discharge water disposal: <input checked="" type="checkbox"/> Drums <input type="checkbox"/> Sanitary sewer <input type="checkbox"/> Storm sewer <input type="checkbox"/> Surface <input type="checkbox"/> Other:									
Other observations / comments:									
• WQMA started to play up -									

3.75 - 2:34 = 1410 x 5 = 7050 BV
x 4 = 28200 Lts

GW49

3/5/17

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087
Recorded / Developed By: C	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:
Date: 4	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:

Well Purging

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 6.457	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC): 3.018	Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC):
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$(6.457 - 3.018) \times (50^2) \times 0.00314 = 6.75 \quad 4 \quad \times \quad 6.75 = 27.00$$

TD	WL	D	1 BV (L)	BV	# VOLS	Purge Volume (L)
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Start: 11:34 Stop: Elapsed: 4mins Initial depth to water: 3.018
 Final depth to water: 3.098

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
11:34	0	0							3.018
11:37	3	2	0.26	100	7.10	-158	16.2		3.093
11:40	6	4	0.01	97	6.54	-151	16.0		3.098
11:43	9	6	0.00	97	6.36	-146	16.0		3.098
11:46	12	8	0.06	97	6.31	-137	15.90		3.098
11:49	15	10	0.01	97	6.25	-132	16.00		3.098
12:52	18	12	0.02	102	6.27	-74	16.20		3.098
11:55	21	14	0.01	104	6.35	-85	16.20		3.098
11:58	24	16	0.05	99	6.31	-99	16.00		3.098
12:01	27	18	0.05	99	6.30	-97	16.00		3.098
		27		27L	Purged				

Groundwater equilibrium reached at ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C (3 consecutive measurements)

Observations at start of development (turbidity, colour, odour, sheen): low turbidity
 Observations at end of development (turbidity, colour, odour, sheen): no sheen / odour

Volume of water actually purged during development: as above

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:

GW47

11/5/17

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087
Recorded / Developed By:	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:
Date:	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:

Well Purgng

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 3.203	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Perasteltic
Water Level Depth (WL in m BTOC): 1.662	Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC):
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$(3.203 - 1.662) \times (50 \text{ mm})^2 \times 0.00314 = 3.024 \times 4 = 12.10$$

TD WL D 1 BV (L) BV # VOLS Purge Volume (L)

Start: Stop: Elapsed: Initial depth to water:
Final depth to water:

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
4:55 pm	0	0	0.78	1114	6.94	50n	18.50	1.704	
4:58 pm	3	2	1.58	1240	7.03	52	18.80	1.675	
5:01 pm	6	4	0.73	1345	7.04	59	18.90	1.708	
5:04 pm	9	6	1.25	1455	7.07	61	19.00	1.702	
5:07 pm	12	8	0.72	14.66	6.92	69	19.00	1.710	
5:10	15	10	0.69	1464	6.91	65	19.00	1.716	
5:13	18	12	0.75	1469	6.89	66	19.10	1.716	
5:15	21	14	0.73	1486	6.87	67	19.10	1.719	

Groundwater equilibrium reached at ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C (3 consecutive measurements)

Observations at start of development (turbidity, colour, odour, sheen): Low turbidity, no odour / sheen

Observations at end of development (turbidity, colour, odour, sheen): as above

Volume of water actually purged during development: 14.66

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:

GW46

2/5/17

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087
Recorded / Developed By: /	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:
Date: / /	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:

Well Purging

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailor - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 3.988	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Perasteltic
Water Level Depth (WL in m BTOC): 2.134	Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC):
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$\left(\frac{3.988 - 2.134}{1.864} \right) \times \left(\frac{50}{12} \right)^2 \times 0.00314 = 3.6 \quad 4 \times 3.638 = 14.55$$

TD 1.864 WL D 1 BV (L) BV # VOLS Purge Volume (L)

Start: 8:06 Stop: 8:30 Elapsed: 24 Initial depth to water: 2.134
 Final depth to water: 2.165

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
8:06	0	0							
8:09	3	2	0.45	1822	6.65	-40	20.1	2.165	
8:12	6	4	0.07	1583	6.75	-56	20.8	2.166	
8:15	9	6	0.02	1549	6.78	-57	20.9	2.167	
8:19	12	8	0.11	1542	6.63	-49	20.9	2.168	
8:21	15	10	0.03	1537	6.48	-57	21.00	2.165	
8:24	18	12	0.07	1530	6.65	-54	21.01	2.168	
8:27	21	14	0.05	1531	6.63	-54	21.10	2.168	
8:30	23	16	0.05	1528	6.68	-55	21.00	2.165	

Groundwater equilibrium reached at ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C (3 consecutive measurements)

Observations at start of development (turbidity, colour, odour, sheen): *no odour, turbidity*
 Observations at end of development (turbidity, colour, odour, sheen): *no odour, sheen*
 Volume of water actually purged during development: *low turbidity, no odour, sheen*

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments: 16L

BW49

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087
Recorded / Developed By: (Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:
Date:	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:

Well Purging

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 6.143	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC): 2.579	Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC):
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$(6.143 - 2.579) \times (50 / 12)^2 \times 0.00314 = 6.99 \quad 4 \quad \times \quad 6.99 = 28L$$

TD WL D 1 BV (L) BV # VOLS Purge Volume (L)

Start: 10:41 Stop: 11:23 Elapsed: 42 Initial depth to water:
Final depth to water:

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
10:41	0							2.579	
10:44	3	2	0.99	9890	6.95	-93	17.4	2.656	
10:47	6	4	0.21	1278	6.83	-129	16.9	2.660	
10:50	9	6	0.12	1499	6.78	-155	16.8	2.659	
10:53	12	8	0.65	1533	6.74	-160	16.8	2.659	
10:56	15	10	0.45	1569	6.74	-170	17.00	2.659	
10:59	18	12	0.60	1602	6.58	-183	16.80	2.659	
11:02	21	14	0.40	1599	6.75	-196	16.80	2.659	
11:05	24	16	0.39	1145	6.78	-189	16.80	2.659	
11:08	27	18	0.43	1136	6.79	-186	16.90	2.659	
	not	stable	purged			to		28L	

Groundwater equilibrium reached at ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C (3 consecutive measurements)

Observations at start of development (turbidity, colour, odour, sheen): low turbidity, slight sulphur smell

Observations at end of development (turbidity, colour, odour, sheen): no sheen

Volume of water actually purged during development: 28L as above

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:

GW41

2/5/17

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087	V
Recorded / Developed By:	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:	
Date:	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:	

Well Purging

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 3.655	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC): 1.554	Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC):
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$(3.655 - 1.554) \times (50 / 12)^2 \times 0.00314 = 4.123 \quad 4 \quad \times \quad 4.123 = 16.49$$

TD WL D 1 BV (L) BV # VOLS Purge Volume (L)

Start: 14:37 Stop: 15:04 Elapsed: 29 min Initial depth to water: 1.554
 Final depth to water: 1.643

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
14:37		0						1.550	
14:40		2	0.73	474	7.18	-29	19.10	1.643	
14:43		4	0.53	449	6.99	-40	19.30	1.643	
14:46		6	0.53	461	7.03	-21	19.30	1.643	
14:49		8	0.37	446	7.08	-41	19.30	1.643	
14:52		10	0.17	463	7.46	-43	19.30	1.643	
14:55		12	0.14	462	7.38	-43	19.30	1.643	
14:58		14	0.17	463	6.85	-43	19.30	1.643	
15:01		16	0.23	464	6.65	-45	19.30	1.643	
15:04		18	0.36	464	6.67	-45	19.30	1.643	

Groundwater equilibrium reached at ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C (3 consecutive measurements)

Observations at start of development (turbidity, colour, odour, sheen): High turbidity, no odour/sheen

Observations at end of development (turbidity, colour, odour, sheen): moderate turbidity no odour/sheen

Volume of water actually purged during development:

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:

3/5/2017

6W40

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087
Recorded / Developed By:	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:
Date: 4/5	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:

Well Purging

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 3.850	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC): 1.546	Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC):
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$(3.850 - 1.546) \times (50 / 12)^2 \times 0.00314 = 4.522 \quad 4 \times 4.522 = 18.08$$

TD WL D 1 BV (L) BV # VOLS Purge Volume (L)

Start: 8:30 Stop: 9:00 Elapsed: 30 mins Initial depth to water: 1.541
 Final depth to water: 1.966

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
8:33	0	0	0.18	4,330	4.30	308	18.40	1.541	
8:36	3	2	0.18	4,330	4.30	308	18.40	1.699	
8:39	6	4	0.14	4,440	4.29	319	18.70	1.759	
8:42	9	6	0.14	4,530	4.27	325	18.90	1.809	
8:45	12	8	0.11	4,580	4.28	326	18.90	1.854	
8:48	15	10	0.07	4,620	4.30	323	18.90	1.891	
8:51	18	12	0.25	4,720	4.20	318	18.90	1.932	
8:54	21	14	0.14	4,780	4.33	301	19.00	1.951	
8:59	24	16	0.12	4,810	4.40	293	19.00	1.955	
9:00	27	18	0.14	4,850	4.37	292	19.00	1.966	
		Purged 18.50 L							

Groundwater equilibrium reached at ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C (3 consecutive measurements)

Observations at start of development (turbidity, colour, odour, sheen): *Low turbidity, no odour or sheen*
 Observations at end of development (turbidity, colour, odour, sheen): *as above*

Volume of water actually purged during development: 18.5 L

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment			Project Number: 60431087			Well No: <u>9473</u>							
Recorded / Developed By: <u>F. Santay Hebert</u>			Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:										
Date: <u>23/04/17</u>			Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:										
Well Purgig													
Well Details				Development Method									
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:				<input type="checkbox"/> Bailer - Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water									
Total Depth of Well (TD in m BTOC): <u>4.39</u>				<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Perasteltic									
Water Level Depth (WL in m BTOC): <u>2.655</u>				Pump Intake Setting (if pump used):									
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:				Depth pump set (m BTOC):									
				Screen Interval (m BTOC) Top :		Bottom:							
Anticipated Approximate Purge Volume Calculation													
$\left(\frac{4.39 - 2.655}{1.735} \right) \times \left(\frac{50}{125} \right)^2 \times 0.00314 = 3.4 \quad 4 \quad \times \quad 34 = 13.6$													
TD		WL		D		1 BV (L)		BV		# VOLS		Purge Volume (L)	
Start: <u>11:10</u> Stop: <u>11:57</u> Elapsed: <u>42</u> Initial depth to water: <u>2.655</u>													
Final depth to water: <u>2.656</u>													
Field Parameter Measurements <input checked="" type="checkbox"/> Required <input type="checkbox"/> Not required													
Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)				
11:15	5	1	0.19	615US	7.32	7mV	21.5°C	2.743					
11:25	10	5	0.17	630US	7.79	-16mV	21.7°C	2.742					
11:35	20	10	0.20	595US	6.98	-56mV	22.2°C	2.688					
11:47	32	15	0.24	620US	7.00	-53mV	22.3°C	2.741					
11:57	42	20	0.15	641US	7.03	-64mV	22.2°C	2.656					
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)					
Observations at start of development (turbidity, colour, odour, sheen): dark brown, highly turbid, no odor or sheen, some organic ^{PVC shards} on water in purge basket.													
Observations at end of development (turbidity, colour, odour, sheen): pale brown, transparent, no odor or sheen → clear/transparent.													
Volume of water actually purged during development: <u>20</u>													
Discharge water disposal: <input checked="" type="checkbox"/> Drums <input type="checkbox"/> Sanitary sewer <input type="checkbox"/> Storm sewer <input type="checkbox"/> Surface <input type="checkbox"/> Other:													
Other observations / comments:													

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087	Well No: CW45
Recorded / Developed By: D.L.W.	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:	
Date: 28/04/17	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:	

Well Purging

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 4.71	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC): 3.315	Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC):
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$\left(\frac{4.71 - 3.315}{4.71 - 3.315} \right) \times \left(\frac{50}{1000} \right)^2 \times 0.00314 = \underline{3L} \quad \underline{4} \times \underline{3} = \underline{12L}$$

TD
WL
D
1 BV (L)²
BV
VOLS
Purge Volume (L)

Start: **14:27** Stop: **15:13** Elapsed: **46** Initial depth to water: **3.310**
 Final depth to water: **3.310**

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. ^{MS} (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
14:27	0	0	0.41	4.30	7.20	-86	13.2	3.310	3/4
14:33	6	1.5	0.38	12.27	6.95	-185	16.2	3.310	3/4
14:39	12	3.0	0.40	12.65	6.92	-215	16.6	3.310	3/4
14:45	18	4.5	0.43	8.86	6.38	-213	16.6	3.310	3/4
14:56	29	6.0	0.59	9.07	5.88	-214	16.5	3.310	3/4
15:00	33	7.5	0.56	8.66	6.14	-219	16.5	3.310	3/4
15:05	38	9.0	0.57	8.80	6.39	-222	16.4	3.310	3/4
15:09	42	10.5	0.17	8.94	6.41	-221	16.3	3.310	3/4
15:13	46	12.0	0.19	8.91	6.40	-220	16.3	3.310	3/4

Groundwater equilibrium reached at ±10% ±3% ±0.05 ±10 mV ±0.2 °C (3 consecutive measurements)

Observations at start of development (turbidity, colour, odour, sheen):
black, high turbidity, sandy, H2S odour

Observations at end of development (turbidity, colour, odour, sheen):

Volume of water actually purged during development:

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:
Lots of sand, causes blockage in tube and reduced flow rate at times.

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087	Well No: <u>4450</u>
Recorded / Developed By: <u>D.W.</u>	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:	
Date: <u>26/04/17</u>	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:	

Well Purging

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC):	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC):	Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input checked="" type="checkbox"/> Other:	Depth pump set (m BTOC):
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$(4.14 - 3.038) \times (50 / 100)^2 \times 0.00314 = 2 \quad 4 \times 2 = 8$$

TD 4 - 3 WL
D
1 BV (L) 2
BV
VOLS
Purge Volume (L)

Start: 13:14 **Stop:** 13:59 **Elapsed:** 45min **Initial depth to water:** 3.038
Final depth to water: 3.040

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. MS (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
13:14	0	0	0.50	27.58	6.63	-662	16.7	3.038	
Issue with pump, restart									
13:28	0	0	0.86	22.99	6.97	-69	14.8	3.04	3/4
13:33	5	2	0.99	30.1	6.76	-57	16.2	3.04	3/4
13:42	9	4	0.63	28.4	6.74	-54	16.5	3.04	3/4
13:47	14	6	0.81	26.88	6.69	-73	16.3	3.04	3/4
13:53	20	8	0.72	26.30	6.70	-65	16.4	3.04	
13:59	26	10	0.74	26.41	6.73	-70	16.5	3.04	
4 bore volumes removed									

Groundwater equilibrium reached at ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C (3 consecutive measurements)

Observations at start of development (turbidity, colour, odour, sheen):

black, high turb, sand, no odour, no sheen

Observations at end of development (turbidity, colour, odour, sheen):

low turb, yellow, no odour

Volume of water actually purged during development:

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:

500ml: ||||

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment	Project Number: 60431087	Well No: <u>GW53</u>
Recorded / Developed By: <u>D.W.</u>	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:	
Date: <u>26/04/12</u>	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:	

Well Purging

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): <u>3.76</u>	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC): <u>2.475</u>	Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC): <u>3.5</u>
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$\left(\frac{3.7}{1} - \frac{2.5}{1} \right) \times \left(\frac{50}{1000} \right)^2 \times 0.00314 = 2.5 \text{ L} \quad 4 \times 2.5 = 10 \text{ L}$$

TD
WL
D
1 BV (L)
BV
VOLS
Purge Volume (L)

Start: 11:45 **Stop:** 12:19 **Elapsed:** 34 **Initial depth to water:** 2.475
Final depth to water: 2.475

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
11:45	0	0	0.6	1581	6.48	-47	17.2	2.475	3
11:51	6	2	1.20	1617	6.45	-57	18.5	2.475	3
11:58	13	4	0.75	1605	6.48	-75	18.7	2.475	3
12:05	20	6	0.66	1617	6.36	-78	18.6	2.475	3
12:12	27	8	0.62	1619	6.44	-79	18.7	2.475	3
12:19	34	10	0.68	1618	6.41	-78	18.6	2.475	3
4 bore volumes removed.									
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)	

Observations at start of development (turbidity, colour, odour, sheen):

Sandy, high turb, black, no odour, no sheen

Observations at end of development (turbidity, colour, odour, sheen):

Low turbidity, brown, slight H2S odour

Volume of water actually purged during development:


Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:

Scale:

CPFO471o (ENV) Site Contamination Analysis Well Development Form

Project Name: FBURA Groundwater Assessment			Project Number: 60431087			Well No: 4254			
Recorded / Developed By: D.W.			Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other:						
Date: 2 24/4/17			Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other:						
Well Purging									
Well Details					Development Method				
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:					<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water				
Total Depth of Well (TD in m BTOC): 4.87					<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Perastaltic				
Water Level Depth (WL in m BTOC): 3.085					Pump Intake Setting (if pump used):				
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:					Depth pump set (m BTOC): 4.5				
					Screen Interval (m BTOC) Top: Bottom:				
Anticipated Approximate Purge Volume Calculation									
$\left(\frac{4.8}{5.0} - \frac{3.0}{5.0} \right) \times \left(\frac{50}{1000} \right)^2 \times 0.00314 = \approx 4L$ $4 \times 4 = 16L$									
Start: 10.25 Stop: Elapsed: Initial depth to water: 3.090 Final depth to water: 3.100									
Field Parameter Measurements <input checked="" type="checkbox"/> Required <input type="checkbox"/> Not required									
Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. $\mu S/cm$	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
10:25	0	0.0	1.40	3.02	6.47	51	17.5	3.090	$\frac{2}{4}$
10:33	8	2.0	1.04	2.81	6.53	11	17.3	3.100	$\frac{3}{4}$
10:45	18	4.0	1.10	2.78	6.52	-58	16.9	3.100	$\frac{3}{4}$
10:49	24	5.5	0.72	2.77	6.52	-94	17.8	3.100	$\frac{3}{4}$
10:00	35	7.0	1.19	2.71	6.34	-93	17.9	3.100	$\frac{3}{4}$
11:07	42	9.0	1.07	2.75	6.34	-100	17.7	3.100	
11:15	50	11.0	1.00	2.74	6.35	-99	17.8	3.100	
Stable Parameters									
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)	
Observations at start of development (turbidity, colour, odour, sheen): black/brown, high turbidity, no odour, no sheen, sandy									
Observations at end of development (turbidity, colour, odour, sheen): slight H2S odour, low turb, light brown									
Volume of water actually purged during development: Discharge water disposal: <input checked="" type="checkbox"/> Drums <input type="checkbox"/> Sanitary sewer <input type="checkbox"/> Storm sewer <input type="checkbox"/> Surface <input type="checkbox"/> Other:									
Other observations / comments:									

500
250ml: 

CPFO471o (ENV) Site Contamination Analysis Well Development Form

AECOM

Project Name: FBURA Groundwater Assessment
 Recorded / Developed By: Breana Pearce
 Date: 26/4/17
 Project Number: 60537182
 Well No: GW 18
 Well Type: Monitor Extractor Other:
 Well Material: PVC SS Other:

Well Purging

Well Details	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:	<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 3.480	<input checked="" type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC): 2.085	Pump Intake Setting (if pump used): ~ 3.2
Number of bore volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:	Depth pump set (m BTOC):
	Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$\left(\frac{3.480 - 2.08}{1.4} \right) \times \left(\frac{6.25}{2} \right)^2 \times 0.00314 = \text{_____} \times \text{_____} = \text{_____}$$

TD 1.4m WL 2.08 D 6.25 1 BV (L) BV # VOLS Purge Volume (L)

Start: 13:41 Stop: _____ Elapsed: _____ Initial depth to water: _____
 Final depth to water: _____

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
13:44	3	1.0	1.46	1623	6.50	-23	18.7	2.115	MAX
13:52	11	5.0	2.19	1546	6.35	-13	20.2	2.120	"
14:00	19	10.0	1.36	1734	6.27	-13	20.3	2.120	"
14:09	28	15.0	2.30	1651	6.31	-17	19.1	2.120	"
14:21	40	20.0	1.950	1700	6.34	-15	19.0	2.120	"
Purge complete after 20L purged. Target volume									
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)	

Observations at start of development (turbidity, colour, odour, sheen):
 Light brown, no odour, mod turb, no sheen

Observations at end of development (turbidity, colour, odour, sheen):
 Light/Golden brown, slight HC odour, no sheen, mod turb.

Volume of water actually purged during development:

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments: A lot of PVC shavings in this well - continue to be pulled out after > 15.0L

CPFO471o (ENV) Site Contamination Analysis Well Development Form

AECO

Project Name: FBURA Groundwater Assessment
 Recorded / Developed By: Breana Pearce
 Date: 26/4/17
 Project Number: 60537182
 Well Type: Monitor Extractor Other
 Well Material: PVC SS Other
 Well No: GW53

Well Purging

Well Details
 Well Diameter (D in mm): 50 100 Other:
 Total Depth of Well (TD in m BTOC): 3.750
 Water Level Depth (WL in m BTOC): 2.460
 Number of bore volumes to be purged (# VOLS): 3 4 5 10 Other:
 Anticipated Approximate Purge Volume Calculation

$$\frac{(3.750 - 2.460) \times (0.05)^2 \times 0.00314}{1.300} \times 4 \times 265 = \sim 15 L$$
 TD 1.300 WL D 1 BV (L) BV # VOLS Purge Volume (L)

Development Method
 Bailer - Type: PVC SS Teflon Other: Steel to stir up water
 Pump - Type: Submersible Bladder Other: Peristaltic
 Pump Intake Setting (if pump used):
 Depth pump set (m BTOC): 3.500
 Screen Interval (m BTOC) Top: Bottom:

Start: 12:45 Stop: Elapsed: Initial depth to water:
 Final depth to water:

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
12:50	5	1.0	2.64	1100	6.53	-7	17.8	2.495	Max - had to stop for 2 mins to unblock
12:58	13	5.0	2.77	1652	6.53	10	17.8	2.500	"
13:08	23	10.0	2.60	1631	6.36	24	17.0	2.500	"
13:19	34	15.0	2.57	1584	6.50	4	17.3	2.500	"
13:27	42	20.0	3.06	1653	6.51	-1	17.0	2.500	"
Purged 20L from well. Target volume.									
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)	

Observations at start of development (turbidity, colour, odour, sheen):
 Dark Brown, sediments + sand, no odour, no sheen, med turbidity

Observations at end of development (turbidity, colour, odour, sheen):
 Golden-brown, med turbidity, slight HC odour, no sheen

Volume of water actually purged during development:
 Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:
 Small pvc pipe shavings came up plugging & blocked it (couple of times) - 1

CPFO471o (ENV) Site Contamination Analysis Well Development Form

AECOM

Project Name: FBURA Groundwater Assessment
 Recorded / Developed By: Breana Pearce
 Date: 27/4/17
 Project Number: 60537182
 Well Type: Monitor Extractor Other:
 Well Material: PVC SS Other:
 Well No: GWR80 NEW

Well Details	Well Purging	Development Method
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other:		<input type="checkbox"/> Bailor - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other: Steel to stir up water
Total Depth of Well (TD in m BTOC): 4.430		<input checked="" type="checkbox"/> Pump - Type: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Bladder <input checked="" type="checkbox"/> Other: Peristaltic
Water Level Depth (WL in m BTOC): 1.470		Pump Intake Setting (if pump used):
Number of bore volumes to be purged (# VOLS): <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other:		Depth pump set (m BTOC): 4.200
		Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$(4.430 - 1.470) \times (0.50 / 12)^2 \times 0.00314 = 5.80 \text{ L} \quad 4 \times 5.8 = 23.2 \text{ L}$$

TD (2.96) WL D 0.25 1 BV(L) BV # VOLS Purge Volume (L)

Start: 9:52 Stop: 11:00 Elapsed: Initial depth to water:

Final depth to water:

Field Parameter Measurements <input checked="" type="checkbox"/> Required <input type="checkbox"/> Not required									
Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
9:54	02	1.0	0.93	1434	6.52	-82	17.2	1.520	MAX
9:58	04	5.0	1.31	1255	6.63	-75	18.9	1.520	
10:02	08	10.0	0.96	1171	6.67	-80	19.0	1.510	
broke -		15.0	changed pump to peristaltic						
10:33	start	20.0							
10:45		15.0	1.64	1162	6.70	-78	17.50	1.510	↓
10:54		20.0	1.30	1141	6.81	-83	16.7	1.510	↓
10:58		23.0	1.51	830	6.74	-64	17.9	1.510	↓
completed purging 4 bore volumes									
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)	

Observations at start of development (turbidity, colour, odour, sheen):
 Grey, high turb, no odour/sheen, significant sediment

Observations at end of development (turbidity, colour, odour, sheen):
 Light brown, clear,

Volume of water actually purged during development:

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:
 ② 10 L pump burnt out, went back to shed @ 10:15 & got peristaltic. Back at GWR80 at 10:30. set up & start purging at 10:33.

CPFO471o (ENV) Site Contamination Analysis Well Development Form

AECOM

Project Name: FBURA Groundwater Assessment

Project Number: 60537182

Well No: **FW-31 New**

Recorded / Developed By: **Breana Pearce**

Well Type: Monitor Extractor Other:

Date: **27/4/17**

Well Material: PVC SS Other:

Well Purging

Well Details

Well Diameter (D in mm): 50 100 Other:

Total Depth of Well (TD in m BTOC): **4.250**

Water Level Depth (WL in m BTOC): **1.9750**

Number of bore volumes to be purged (# VOLS):
 3 4 5 10 Other:

Development Method

Bailer - Type: PVC SS Teflon Other: Steel to stir up water

Pump - Type: Submersible Bladder Other: Peristaltic

Pump Intake Setting (if pump used):

Depth pump set (m BTOC): **~ 4.00 m**

Screen Interval (m BTOC) Top: Bottom:

Anticipated Approximate Purge Volume Calculation

$$\frac{(4.250 - 1.9750) \times (\frac{1}{2})^2 \times 0.00314}{1 \text{ BV (L)}} \times 4 \text{ BV} \times 4.475 = 18.00$$

TD 2.28 WL D 1 BV (L) BV # VOLS Purge Volume (L)

Start: **11:14** Stop: **11:55** Elapsed:

Initial depth to water: **1.970**

Final depth to water:

Field Parameter Measurements Required Not required

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
11:28	09	1.0	1.66	1422	6.68	-71	17.3	2.00	MAX
11:29	15	5.0	2.05	1438	6.72	-66	17.7	2.00	"
11:37	23	10.0	2.71	1503	6.67	-42	18.5	"	"
11:46	32	15.0	2.49	1414	6.59	-73	18.6	"	"
11:55	41	20.0	2.09	1456	6.73	-72	17.4	"	"
20L purged @ 11:55 - target volume									
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)	

Observations at start of development (turbidity, colour, odour, sheen):

High Turb, brown, no odour, no sheen. SAND - blocked first tubing. Had to use new tubing

Observations at end of development (turbidity, colour, odour, sheen):

Brown, mod T, no odour or sheen.

Volume of water actually purged during development:

Discharge water disposal: Drums Sanitary sewer Storm sewer Surface Other:

Other observations / comments:

Client **Environment Protection Agency**
 Project **Victoria Fishermans Bend Employment Precinct**
 Project number **60537182**

Co-ordinates
 Orientation Elevation
 Location **Fishermans Bend, Melbourne**
 Consent No.

PRELIMINARY

Excavation Method Casing Remarks	Core Loss/Lift 0-100%	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION (consistency, relative density, water content, plasticity, grading, etc)	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0-100%				0.0	Dark brown, Fine grained, Dry, Silty Sand.		No odour.		A	
					0.50	Rubble with asphalt and brick inclusions.					
					0.70	Dark Brown with Orange Mottles, Low Plasticity, Dry, Clay with minor fine sand.		Slight organic / sulphur odour.			
					1.00						
HSA	1.50 GW40-1.5			2.1	Black / Brown, Soft, Wet, Gravelly Clay with minor brick inclusions.						
					2.00	<i>NATURAL</i> Brown / Yellow, Fine to Medium grained, Well Sorted, Saturated, Sand. Becoming Grey.					
					3.00						
HSA	GW40-3.0			0.0							
					4.00	<i>APPROX</i> With 10% Shell inclusions. Grey / Blue, High Plasticity, Saturated, Clay with minor shell inclusions.					
					4.50	Grey, Fine to Medium grained, Well Sorted, Saturated, Sand.					
	GW40-4.5			2.6							

GROUNDWATER OBSERVATIONS Depth <u>1.8m</u> Reading <u>1</u> Date <u>-</u>	Date logged 24/04/2017 Logged AB Checked	Remarks GW40 Terminated at 4.5m - Target Depth NDD = Non Destructive Digging HSA = Hollow Stem Auger	Driller Chadwick Geotechnics Drill Rig Started 12/04/2017 Finished 24/04/2017
	Page 1 of 1		

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

Client **Environment Protection Agency**
 Project **Victoria Fishermans Bend Employment Precinct**
 Project number **60537182** **PRELIMINARY**

Co-ordinates
 Orientation Elevation
 Location **Fishermans Bend, Melbourne**
 Consent No.

Excavation Method <small>Coring Methods</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
	Core Loss/Lift <small>0 - 100%</small>	Sample ID	Analysis							
NDD	0.05			0.0		Brown / Yellow, Fine grained, Soft, Dry, Clayey Sand, overlain by Railway Ballast. <i>Fill</i>		No odour.		
	0.50			0.0		Mottled Pale Orange / Yellow, Fine to Medium grained, Loosely Packed, Dry, Sand.		No odour.		
	1.00			0.0		Mottled Pale Orange / Yellow, Fine to Medium grained, Loosely Packed, Dry, Sand.		No odour.		
	1.50			0.0		Mottled Pale Orange / Yellow, Fine to Medium grained, Loosely Packed, Moist, Sand.		No odour.		
	1.70			0.0		Orange / Pale Grey, Fine to Medium grained, Loosely Packed, Saturated, Sand.		No odour.		
Sonic	2.00			0.0		Becoming Pale Grey.				
	2.50			0.0		Minor Shell inclusions.				
	3.00			0.0						
	4.00			0.0						
	4.50			0.0						
	4.90			0.0						

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

GROUNDWATER OBSERVATIONS Depth - Reading Date 1.8m 1 - 1.86m 2 -			Date logged 20/04/2017 Logged JLM Checked	Remarks GW43 Terminated at 5.0m - Target Depth NDD = Non Destructive Digging	Driller Chadwick Geotechnics Drill Rig Started 12/04/2017 Finished 20/04/2017
Page 1 of 1					

Client **Environment Protection Agency**
 Project **Fishermans Bend Employment Precinct**
 Project number **60537182**

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

PRELIMINARY

Excavation Method <small>Core Loss/Lift</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
	Sample ID	Analysis	PID (ppm)							
NDD	0.05		0.0	0.0		Brown, Soft, Low Plasticity, Dry, Sandy Clay with organic material. <i>topsoil</i> Light Brown, Low Plasticity, Dry, Sandy Clay with some bricks. <i>fill</i>		No odour.		
	0.50		0.0	0.0		Becoming Sandy.				
	1.00		0.0	1						
	1.50	GW45-1.5		0.0	0.0	Dry, Loosely Packed, Sandy Clayey Gravel, with broken glass, bricks and concrete. Becoming Moist.				
HSA	GW45-2.0		0.0	2						
	GW45-2.5		0.0							
	GW45-3.0		0.0	3		<i>NATURAL:</i> Grey / White, Fine to Medium grained, Moderately Sorted , Moist, Sand with 10% Shell inclusions. Becoming Black, Saturated.				
	GW45-3.3		0.0			Becoming Grey, Fine.				
	GW45-4.9		0.0	5						

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

GROUNDWATER OBSERVATIONS
 Depth Reading Date
 3.3m 1 -

Date logged 24/04/2017
 Logged AB
 Checked

Remarks
 GW45 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 18/04/2017
 Finished 24/04/2017

Client **Environment Protection Agency**
 Project **Victoria Fishermans Bend Employment Precinct**
 Project number **60537182**

Co-ordinates
 Orientation Elevation
 Location **Fishermans Bend, Melbourne**
 Consent No.

PRELIMINARY

Excavation Method Casing remains	Core Loss/Lift 0-100%	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater Well Construction
		Sample ID	Analysis	PID (ppm)						
NDD	0-100%				0.0	Asphalt Roadway.			Slight organic odour.	
					0.15	Dark Brown, Clayey Gravel with basalt. Roadbase.				
					0.50	Brown, Fine grained, Gravelly Sand with Clay and broken glass inclusions.			No odour.	
					1.00	Pale Brown, Medium grained, Dry, Sand.			No odour.	
					1.50	Orange / Yellow, Medium to Coarse grained, Dry, Sand. Light Brown, Fine grained, Loosely Packed, Moist, Sand.			No odour.	
					2.00	Grey, Fine grained, Loosely Packed, Moist to Wet, Sand.				
					3.00	With 20% Shell inclusions. Becoming Saturated.				
					4.00	With Lenses of Darker Compacted Shells.				

GROUNDWATER OBSERVATIONS Depth <u>2.3m</u> Reading <u>1</u> Date <u>-</u>	Date logged <u>24/04/2017</u> Logged <u>TM</u> Checked	Remarks GW46 Terminated at 4.5m - Target Depth NDD = Non Destructive Digging HSA = Hollow Stem Auger	Driller <u>Chadwick Geotechnics</u> Drill Rig Started <u>18/04/2017</u> Finished <u>24/04/2017</u>
	Page 1 of 1		

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

Client **Environment Protection Agency**
 Project **Victoria Fishermans Bend Employment Precinct**
 Project number **60537182**

Co-ordinates
 Orientation Elevation
 Location **Fishermans Bend, Melbourne**
 Consent No.

PRELIMINARY

Excavation Method Casing remarks	Core Loss/Lift 0 - 100%	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION (consistency, relative density, water content, plasticity, grading, etc)	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0-100%				0.0	Dark Brown, Loosely Packed, Dry, Sandy Silt. <i>Topsoil.</i>		No odour.			
					0.05	Loosely Packed, Dry, Basalt Fill with red brick rubble and organic material. Fill.		No odour.			
					0.50	With Asphalt rubble. <i>Fill.</i>		No odour.			
					0.80	Dark Grey, Medium grained, Loosely Packed, Dry, Sand.		No odour.			
					1.00	Becoming Pale Yellow.					
HSA	0-100%				1.30	<i>NATURAL</i>					
					1.50	Black, Fine grained, Moderately Sorted, Moist, Sand.					
					1.50	GW48-1.5	0.0				
				0.7	2	Brown, Fine to Medium grained, <i>Moderately Sorted</i> , Saturated, Sand.					
				0.7	2	Grey, Fine grained, Well Sorted, Saturated, Sand.					
				0.4	3						
				0.7	4	with 10% Shell inclusions.					
				0.7							

GROUNDWATER OBSERVATIONS
 Depth - Reading Date
 1.9m 1 -

Date logged 20/04/2017
 Logged AB
 Checked
 Remarks
 GW48 Terminated at 4.5m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 17/04/2017
 Finished 20/04/2017

Client Environment Protection Agency
 Project **Victoria Fishermans Bend Employment Precinct**
 Project number 60537182

PRELIMINARY

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method Casing Remarks	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
	Core Loss/Lift	Sample ID	Analysis							
NDD	0-100%									
	0.05			0.0		Fine grained, Soft, Moist, Silty Sand with minor brick inclusions and organic material. Topsoil Brown with Orange Mottles, Low Plasticity, Dry, Clay with concrete inclusions. Fill		No odour.		
	0.50			0.0		With Brick inclusions.		No odour.		
	1.00			0.0		With Concrete inclusions.		No odour.		
	1.50	GW50-1.5		0.0		Dark brown, Fine grained, Loosely Packed, Dry, Sand with granite gravel. Brown / Orange, Medium grained, Sand with gravel.		No odour.		
HSA				0.0						
		GW50-2.0		0.1		NATURAL: Black / Grey, Fine to Medium grained, Moderately Sorted, Moist, Sand.				
		GW50-2.5		1.7		Becoming Wet.				
		GW50-3.0 GW50-3.1		2.0 2.1		With 20% Fine Shell inclusions. Becoming Black.				
				4		Grey, Fine grained, Well Sorted, Saturated, Sand.		Slight organic odour.		
				10.9						

GROUNDWATER OBSERVATIONS Depth <u>4m</u> Reading <u>1</u> Date <u>-</u>		Date logged 20/04/2017 Logged AB Checked	Remarks GW50 Terminated at 5.0m - Target Depth NDD = Non Destructive Digging HSA = Hollow Stem Auger	Driller Chadwick Geotechnics Drill Rig Started 13/04/2017 Finished 20/04/2017
Page 1 of 1				

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

Client Environment Protection Agency
 Project Victoria Fishermans Bend Employment Precinct
 Project number 60537182 PRELIMINARY

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method Casing remarks	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION (consistency, relative density, water content, plasticity, grading, etc)	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
	Core Loss/Lift	Sample ID	Analysis							
NDD	0-100%									
	0.05			0.0	Dark Brown, Soft, Moist with organic matter. Topsoil			No odour.		
				0.50	Dark Brown, Fine to Medium grained, Loosely Packed, Dry, Silty Sand with organic matter.			No odour.		
				1.00	Asphalt. Basalt Gravel.			No odour.		
				1.50	Pale Grey, Medium grained, Loosely Packed, Moist, Sand.					
				2.00	Black, Fine to Medium grained, Well Sorted, Dry, Sand. Becoming Grey / White. Becoming Saturated.					
HSA				3.00	NATURAL - Grey / White, Fine grained, Well Sorted, Wet to Saturated, Sand. With 10% Shell inclusions.					
				4.00	Grey / White, Fine grained, Well Sorted, Wet to Saturated, Sand. With 10% Shell inclusions.					
				5.00						

GROUNDWATER OBSERVATIONS Depth 2m Reading 1 Date -		Date logged 20/04/2017 Logged AB Checked	Remarks GW51 Terminated at 5.0m - Target Depth NDD = Non Destructive Digging HSA = Hollow Stem Auger	Driller Chadwick Geotechnics Drill Rig Started 11/04/2017 Finished 20/04/2017
Page 1 of 1				

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

Client Environment Protection Agency
 Project Victoria Fishermans Bend Employment Precinct
 Project number 60537182

PRELIMINARY

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Chainage Comments</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
	Core Loss/Lift	Sample ID	Analysis							
NDD	0-100%					Dark Brown, Medium grained, Soft, Moist, Silty Sand with organic material. Fill Topsoil		No odour.		
						Light Brown, Fine to Medium grained, Loosely Packed, Dry, Sand with gravel. Fill		No odour.		
						Pale Grey, Medium grained, Sand.		No odour.		
						Brown / Red, Loosely Packed, Silty Sand with organic material.		No odour.		
						Light Grey / White, Fine to Medium grained, Loosely Packed, Dry Sand with minor organic material and concrete inclusions.		No odour.		
HSA	1.50	GW52-1.5		0.0		Black / Brown, Fine to Coarse grained, Moderately Sorted , Moist, Sand.				
		GW52-2.0		0.0		Becoming Fine to Medium grained.				
		GW52-2.5		0.0		Fine grained, Well Sorted, Saturated, Sand.				
		GW52-3.0		0.0						
		GW52-3.7		0.0						
		GW52-4.5		0.0						

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

GROUNDWATER OBSERVATIONS
 Depth - Reading Date
 2.6m 1 -

Date logged 21/04/2017
 Logged AB
 Checked

Remarks
 GW52 Terminated at 4.5m - Target Depth
 NDD = Non Destructive Digging
 HSA = Hollow Stem Auger

Driller Chadwick Geotechnics
 Drill Rig
 Started 11/04/2017
 Finished 21/04/2017

Client Environment Protection Agency
 Project Victoria Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

PRELIMINARY

Excavation Method <small>Core Loss/Lift</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater Well Construction
	Sample ID	Analysis	PID (ppm)						
NDD	0.05			0.0		Dark Brown, Dry, Silty Sand with organic matter. Topsoil		No odour.	
	0.50			0.0		Brown, Fine to Medium grained, Loosely Packed, Dry, Sandy Clay with concrete and asphalt inclusions. Fill		No odour.	
	0.70			0.0	Becoming Pale Yellow.				
	1.00			0.0	1	Dark Grey, Medium grained, Loosely Packed, Dry, Sand with minor clay.		No odour.	
	1.50	GW53-1.5		0.0	0.0	Brown, Fine to Medium grained, Moderately Sorted , Dry, Sand.			
HSA				0.0		Becoming White.			
	GW53-2.0			0.0		2	Dark Brown / Brown, Fine to Coarse grained, Poorly Sorted, Wet, Sand.		
	GW53-2.5			0.0	Becoming Fine to Medium grained, Moderately Sorted .				
	GW53-3.0			0.0	3	Grey, Fine grained, Saturated, Sand.			
	GW53-4.5			0.0	4				

GROUNDWATER OBSERVATIONS Depth <u>3m</u> Reading <u>1</u> Date <u>-</u>		Date logged 21/04/2017 Logged AB Checked	Remarks GW53 Terminated at 4.5m - Target Depth NDD = Non Destructive Digging HSA = Hollow Stem Auger	Driller Chadwick Geotechnics Drill Rig Started 12/04/2017 Finished 21/04/2017
Page 1 of 1				

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

Client **Environment Protection Agency**
 Project **Victoria Fishermans Bend Employment Precinct**
 Project number **60537182** **PRELIMINARY**

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Chain remarks</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05			0.0		Brown / Grey, Fine to Medium grained, Loosely Packed, Dry, Sand with organic material, bark and brick inclusions. <i>Top soil</i>		No odour.			
	0.50			0.0		<i>M</i> With minor Clay and ash. <i>Fill</i>		No odour.			
	1.00			0.0	1	<i>B</i> With brick inclusions.					
	1.50	GW56-1.5		0.0	0.0	<i>NAT</i> Becoming Moist. Dark Brown / Grey, Fine to Medium grained, Loosely Packed, Moist, Sand with minor silt and shell inclusions. Black / Grey, Fine to Medium grained, Well Sorted, Moist, Sand with 10% shell inclusions.		Slight organic odour.			
HSA		GW56-2.0		0.0	2	With 20% Shell inclusions.					
		GW56-2.5		0.0		Grey / white, Fine grained, Well Sorted, Saturated, Sand with 5% fine shell inclusions.					
		GW56-2.7		0.0	3						
		GW56-4.4		0.0	4						

GROUNDWATER OBSERVATIONS Depth <u>2.5m</u> Reading <u>1</u> Date <u>-</u>			Date logged 19/04/2017 Logged AB Checked	Remarks GW56 Terminated at 4.5m - Target Depth NDD = Non Destructive Digging HSA = Hollow Stem Auger	Driller Chadwick Geotechnics Drill Rig Started 13/04/2017 Finished 19/04/2017
Page 1 of 1					

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

Client Environment Protection Agency
 Project **Victoria Fishermans Bend Employment Precinct**
 Project number 60537182

PRELIMINARY

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Chainage remains</small>	Core Loss/Lift <small>0-100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05			0.0		Dark Brown, Loosely packed, Moist, Sandy Silt with organic material and minor gravel. Topsoil		No odour.			
	0.50			3.8		Dark Brown, Fine grained, Loosely Packed, Dry, Silty Sand with minor clay.					
	1.00			8.6		With Basalt, slate and scoria gravel and cobble inclusions.					
	1.50			1.5		Dark Brown, Fine grained, Loosely Packed, Dry, Silty Sand with minor organic material, gravel and brick inclusions.		No odour.			
	2.00			0.1		Dry, Sandy Gravel with brick and building material.					
Sonic	2.50			13.8		Building Material including broken glass, plastic, gravel, asphalt.		Anaerobic odour.			
	3.00			5.3		Becoming Wet.					
	4.50			0.3		NATURAL: Grey, Fine grained, Loosely Packed, Well Sorted, Dry, Sand with minor shell inclusions.					
	5.00			0.0							

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE_GDT 30/05/17

GROUNDWATER OBSERVATIONS
 Depth - Reading Date
 2.345m 1 -

Date logged 24/04/2017
 Logged JLM
 Checked

Remarks
 GW61 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging

Driller Chadwick Geotechnics
 Drill Rig
 Started 11/04/2017
 Finished 24/04/2017

Client Environment Protection Agency
 Project Victoria Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

PRELIMINARY

Excavation Method Casing Remarks	Core Loss/Lift	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc.)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		Dark Brown, Loosely Packed, Dry, Clayey Silty Gravel, overlain with railway basalt gravel. <i>fjil</i>		No odour.		
	0.50				0.0		With Medium to Coarse Sand and organic material.				
	0.60				0.0		Dark Brown, Medium to Coarse grained, Loosely Packed, Dry, Clayey Sand.				
	1.00				0.0		Pale Yellow, Medium to Coarse grained, Loosely Packed, Dry, Sand.		No odour.		
GW67 1.4	1.50				0.0		Brown with Orange Mottles, Fine to Medium grained, Loosely Packed, Dry, Sand. <i>NATURAL - KEEP LINE</i>		No odour.		
	2.10				0.0		Pale Yellow, Fine to Medium grained, Loosely Packed, Dry, Sand. Becoming Brown and Moist.				
SSA	2.30				0.0		Becoming Wet.				
	3.00				0.0		Grey / Orange, Fine to Medium grained, Loosely Packed, Wet, Sand.		No odour.		
	4.00				0.0		With minor Shell inclusions.				
	5.00				0.0						

GROUNDWATER OBSERVATIONS Depth - Reading Date 1.871m 1 -		Date logged 20/04/2017 Logged JLM Checked	Remarks GW67 Terminated at 5.0m - Target Depth NDD = Non Destructive Digging SSA = Solid Stem Auger	Driller Chadwick Geotechnics Drill Rig Started 12/04/2017 Finished 20/04/2017
Page 1 of 1				

Client: Environment Protection Agency
 Project: Victoria Fishermans Bend Employment Precinct
 Project number: 60537182

Co-ordinates: _____
 Orientation: _____ Elevation: _____
 Location: Fishermans Bend, Melbourne
 Consent No.: _____

PRELIMINARY

Excavation Method Casing remarks	Core Loss/Lift	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION (consistency, relative density, water content, plasticity, grading, etc)	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction	
		Sample ID	Analysis	PID (ppm)								
NDD	0 - 100%					Asphalt Roadway.			No odour.			
		0.20			13.2	Brown / Grey, Fine to Medium grained, Sand with brick and rubble inclusions. <i>Fill</i>			No odour.			
		0.50			10.1				No odour.			
		0.80			0.80	Dark Brown / Grey, Fine grained, Silty Sand with some organic material. <i>Fill</i>			No odour.			
		1.00			0.3	Orange, Fine to Medium grained, Sand. <i>Fill</i>			No odour.			
						Becoming Mottled. <i>Fill</i>						
		1.50			3.2	Pale Grey with Orange Mottles, Fine to Medium grained, Sand. <i>Fill</i> Light Brown, Fine grained, Wet, Sand with some Clay.			No odour.			
						Becoming Saturated.						
					0.0	2	Grey, Fine grained, Loosely Packed, Saturated, Sand.					
	HSA											
PT												

GROUNDWATER OBSERVATIONS Depth: 1.5m Reading: 1 Date: -			Date logged: 24/04/2017 Logged: MW Checked:	Remarks: GW70 Terminated at 4.5m - Target Depth NDD = Non Destructive Digging HSA = Hollow Stem Auger PT = Push Tube	Driller: Chadwick Geotechnics Drill Rig: Started: 11/04/2017 Finished: 24/04/2017
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DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

Client Environment Protection Agency
 Project **Victoria Fishermans Bend Employment Precinct**
 Project number 60537182

PRELIMINARY

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Coring (marks)</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0-100%				0.0	Asphalt. Dark Brown with Black / Red Mottles, Stiff, High Plasticity, Dry to Moist, Clay with Gravel.			ooou?	A	
		GW73-0.2			0.0	With Basalt Cobbles and brick inclusions. Brown with Red / Orange Mottles, Soft, Moderate Plasticity, Dry to Moist, Clay with brick fragments and quartz and basalt gravel inclusions.					
		GW73-0.5			1	Becoming Saturated, Low Plasticity with Coarse Basalt Gravel and Cobbles.					
		GW73-1.0			0.0	Natural: Pale Brown, Fine to Medium grained, Poorly Graded, Loosely Packed, Saturated, Sand.					
Sonic	0-100%				2	Becoming Grey.					
		GW73-1.5			3	Becoming Dark Grey.					
		GW73-2.5			4	With Coarse Shell inclusions. Trace of Dark Grey, Soft, Low Plasticity, Clay.					
		GW73-2.5			5	Dark Grey, Fine to Medium grained, Poorly Graded, Loosely Packed, Saturated, Sand with shell inclusions.					

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

GROUNDWATER OBSERVATIONS Depth <u>2.711m</u> Reading <u>1</u> Date <u>-</u>		Date logged 26/04/2017 Logged MW Checked	Remarks GW73 Terminated at 5.0m - Target Depth NDD = Non Destructive Digging	Driller Chadwick Geotechnics Drill Rig Started 26/04/2017 Finished 26/04/2017
Page 1 of 1				

Client Environment Protection Agency
 Project Victoria Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

PRELIMINARY

Excavation Method <small>Coring Methods</small>	Core Loss/Lift <small>0-100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		Brown, Loosely Packed, Moist, Silty Sand with some organic material. Topsoil. With some Gravel and organic material.		No odour.		
	0.50				0.0		Brown with Orange Mottles, Low Plasticity, Dry, Clay. fill	No odour.			
	1.00				0.0		With minor Fine grained Sand.				
	1.50	GW74-1.5-1.8			0.0		Blue / Green / Brown with Grey Mottles, Angular to Sub-angular, Moist, Gravel with minor Clay.	Some discoloured gravels.			
HSA		GW74-1.8-2.0			0.0		Orange, Moist, Sand with minor Grey Clay and with brick and charcoal inclusions.				
		GW74-3.0A GW74-3.0B			0.0		Grey, Fine grained, Loosely Packed, Moist to Wet, Sand. NAT.	Becoming Saturated.			
		GW74-4.0A GW74-4.0B			0.0		With trace Clay. With 50% Shell inclusions.				

GROUNDWATER OBSERVATIONS Depth - Reading Date 2.4m 1 -			Date logged 24/04/2017 Logged JLM Checked	Remarks GW74 Terminated at 4.5m - Target Depth NDD = Non Destructive Digging HSA = Hollow Stem Auger	Driller Chadwick Geotechnics Drill Rig Started 19/04/2017 Finished 24/04/2017
Page 1 of 1					

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

Client Environment Protection Agency
 Project Victoria Fishermans Bend Employment Precinct
 Project number 60537182

PRELIMINARY

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Chain remains</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
	Core Loss/Lift	Sample ID	Analysis							
NDD	0-100%					Grey, Fine grained, Loosely Packed, Dry, Sand with organic material and concrete inclusions. <i>Fill</i>		No odour.		
						Brown / Yellow with Mottles, Fine to Medium grained, Loosely Packed, Dry, Clayey Sand.		No odour.		
					1	Brown / Grey, Fine to Medium, Loosely Packed, Dry, Sandy Silt with ash and charcoal inclusions. <i>Fill</i>				
						Dark Brown with Orange Mottles, Loosely Packed, Poorly Sorted, Dry, Silty Sand with brick and coal inclusions. <i>Fill</i>				
					2	Pale Yellow / Orange, Fine to Medium grained, Loosely Packed, Moderately Sorted, Moist to Wet, Sand.		No odour.		
Sonic	2.00			13.8						
	2.10			0.1						
	2.20			0.0						
						With Fill Material Brick, gravel and minor sand.				
						<i>NAT</i> Pale Grey, Fine grained, Loosely Packed, Moderately Sorted, Wet, Sand.				
						With minor Silt.				
						With Shell inclusions.				

GROUNDWATER OBSERVATIONS
 Depth 2.703m Reading 1 Date -

Date logged 24/04/2017
 Logged JLM
 Checked

Remarks
 GW75 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging

Driller Chadwick Geotechnics
 Drill Rig
 Started 10/04/2017
 Finished 24/04/2017

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

Client: Environment Protection Agency
 Project: Victoria Fishermans Bend Employment Precinct
 Project number: 60537182
PRELIMINARY

Co-ordinates: _____
 Orientation: _____ Elevation: _____
 Location: Fishermans Bend, Melbourne
 Consent No.: _____

Excavation Method <small>Casing remains</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.20 0.50 0.80 1.00 1.50 2.00 2.10 2.50 3.00 3.50 4.00 4.50 5.00				0.00	Asphalt Roadway.		No odour.			
					0.00	Brown, Firm, Dry, Gravelly Clay. <i>FILL</i>		No odour.			
					0.00	Brown with Orange Mottles, Fine to Medium grained, Loosely Packed, Dry, Sand with minor Clay. <i>FILL</i>		No odour.			
					0.00	Pale Grey, Fine to Medium grained, Loosely Packed, Dry, Sand. <i>FILL</i>		No odour.			
					0.00	Becoming Light Grey.					
					0.00	Orange / Pale Yellow, Fine to Medium grained, Loosely Packed, Moist. <i>SAND?</i>		No odour.			
					0.00	Brown with Orange Mottles, Medium to Coarse grained, Poorly Sorted, Loosely Packed, Wet, Sand with minor Gravel.					
					0.00	<i>NATURAL:</i> Dark Grey, Medium to Coarse grained, Well Sorted, Loosely Packed, Wet, Sand with minor Silt.		Slight organic odour.			
					0.00	Becoming Grey, Fine to Medium grained.					
					0.00	Becoming Fine grained with Shell inclusions.					
0.00	Becoming Pale Grey, Fine to Medium grained.		No odour.								
0.00											

GROUNDWATER OBSERVATIONS Depth - Reading Date 1.8m 1 - 1.999m 2 -			Date logged 24/04/2017 Logged JLM Checked	Remarks GW76 Terminated at 5.0m - Target Depth NDD = Non Destructive Digging	Driller Chadwick Geotechnics Drill Rig Started 18/04/2017 Finished 24/04/2017 Page 1 of 1
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DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

Client: Environment Protection Agency
 Project: Fishermans Bend Employment Precinct
 Project number: 60537182

Co-ordinates: _____
 Orientation: _____ Elevation: _____
 Location: Fishermans Bend, Melbourne
 Consent No.: _____

PRELIMINARY

Excavation Method <small>Chain/Limits</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
	Core Loss/Lift	Sample ID	Analysis							
NDD	0 - 100%					Asphalt				
			GW77-0.5		0.0	Dark Grey, Dense, Dry, Gravel with basalt. <i>fill</i>		No odour.		
			GW77-1.0		0.0	Dark Grey, Fine to Medium grained, Loosely Packed, Dry, Sand. <i>fill</i>		No odour.		
			GW77-1.5		0.0	<i>NATURAL</i> Pale Grey, Well Graded, Loosely Packed, Dry, Sand. <i>keep line</i>		No odour.		
			GW77-2.5		0.0	Light Brown with Mottles, Fine to Medium grained, Poorly Graded, Loosely Packed, Moist, Sand. Pale Brown, Fine to Medium grained, Poorly Graded, Loosely Packed, Wet, Sand. Becoming Light Grey.				
			GW77-3.5		0.0	Becoming Dark Grey. Becoming Saturated with Shell inclusions.				
Sonic						Grey, Fine grained, Poorly Graded, Loosely Packed, Saturated, Sand.				
			GW77-4.5		0.0	With Shell inclusions. Becoming Dark Grey.				

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

GROUNDWATER OBSERVATIONS Depth - Reading Date 3.3m 1 -			Date logged 26/04/2017 Logged MW Checked	Remarks GW77 Terminated at 5.0m - Target Depth NDD = Non Destructive Digging	Driller Chadwick Geotechnics Drill Rig Started 26/04/2017 Finished 26/04/2017
Page 1 of 1					

Client Environment Protection Agency
 Project Victoria Fishermans Bend Employment Precinct
 Project number 60537182

PRELIMINARY

Co-ordinates _____
 Orientation _____ Elevation _____
 Location Fishermans Bend, Melbourne
 Consent No. _____

Excavation Method <small>Casing Remarks</small>	Core Loss/Lift <small>0 - 100%</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0		Dark Brown, Fine grained, Loosely Packed, Moist, Silty Sand with organic material, concrete and brick inclusions. Topsoil fill.		No odour.		
	0.50				0.0		Dark Brown, Fine to medium grained, Loosely Packed, Dry, Silty Sand.		No odour.		
	1.00				1		Light Brown, Fine to Medium grained, Loosely Packed, Dry, Clayey Sand with minor gravel.		No odour.		
	1.50				0.0		with large brick fragments. fill Light Brown, Fine to Medium grained, Loosely Packed, Moist, Sand with minor shell inclusions. Pale Grey / Yellow, Fine to Medium grained, Loosely Packed, Moist, Sand.		No odour.		
	2.50				2						
Sonic	3.00				3		Becoming Wet.		No odour.		
	3.50				0.0						
	4.50				4						
	4.90				5		with abundant Shell inclusions.				

GROUNDWATER OBSERVATIONS
 Depth 3m Reading 1 Date -

Date logged 21/04/2017
 Logged JLM
 Checked

Remarks
 GW80 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging

Driller Chadwick Geotechnics
 Drill Rig
 Started 10/04/2017
 Finished 21/04/2017

Client Environment Protection Agency
 Project Fishermans Bend Employment Precinct
 Project number 60537182

PRELIMINARY

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

Excavation Method <small>Chain remains</small>	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION <small>(consistency, relative density, water content, plasticity, grading, etc)</small>	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
	Core Loss/Lift	Sample ID	Analysis							
NDD	0-100%			0.0		Dark Brown, Loosely Packed, Moist, Silty Sand with minor Gravel, organic material, concrete and brick inclusions. <u>Topsoil and Fill.</u>		No odour.		
				0.50			With increasing Gravel. Becoming Grey and Dry.	No odour.		
				1.00		Brown / Yellow with Orange Mottles, Dry, Clayey Sand with Gravel.				
				1.50		Brown / Red, Soft, Dry, Clayey Sand with trace Gravel. Light Brown, Fine to Medium grained, Loosely Packed, Moist, Sand.				
				2.00		Becoming Wet.		No odour.		
Sonic				3.00		Becoming Fine grained.		No odour.		
				4.00		Becoming Pale Grey with Shell inclusions.		No odour.		
				5.00						
	GW81 4.9									

DRILLHOLE LOG ENVIRONMENTAL FISHERMANS BEND BORE LOGS.GPJ BASE.GDT 30/05/17

GROUNDWATER OBSERVATIONS
 Depth 2.124m
 Reading 1
 Date -

Date logged 21/04/2017
 Logged JLM
 Checked

Remarks
 GW81 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging

Driller Chadwick Geotechnics
 Drill Rig
 Started 10/04/2017
 Finished 21/04/2017

Client Environment Protection Agency
 Project Victoria Fishermans Bend Employment Precinct
 Project number 60537182

Co-ordinates
 Orientation Elevation
 Location Fishermans Bend, Melbourne
 Consent No.

PRELIMINARY

Excavation Method Casing remarks	Core Loss/Lift 0 - 100%	SAMPLING & TESTING			Depth	Graphic Log	MATERIAL DESCRIPTION (consistency, relative density, water content, plasticity, grading, etc)	GEOLOGICAL DESCRIPTION	STAINING/ ODOURS AND COMMENTS	Groundwater	Well Construction
		Sample ID	Analysis	PID (ppm)							
NDD	0.05				0.0	Dark Brown / Grey, Medium grained, Loosely Packed, Dry, Sand with Gravel. <i>Fill</i>		No odour.		A	
	0.20				0.0	Brown / Yellow, Fine to Medium grained, Loosely Packed, Dry, Sand with minor ash inclusions. <i>Fill</i>		No odour.			
	0.50				0.0	Becoming Dark Brown / Grey.		No odour.			
	1.00				0.0	<i>NATURAL</i> Brown / Pale Yellow with Mottles, Fine to Medium Grained, Loosely Packed, Dry, Sand.		No odour.			
	1.30				0.0	Pale Yellow with Orange Mottles, Coarse grained, quartzose, Loosely Packed, Dry, Sand. Orange / Pale Yellow, Loosely Packed, Moist, Sand.		No odour.			
Sonic	1.50				0.0						
	2.00				0.0	2 Pale Grey / Yellow, Fine to Medium grained, Loosely Packed, Wet, Sand.		No odour.			
	2.50				0.0						
	3.00				0.0	3 Becoming Pale Grey.					
	3.50				0.0	Becoming Fine with Shell inclusions.					
	4.00				0.0	4					
	4.50				0.0						
	4.90				0.0	5					

GROUNDWATER OBSERVATIONS		
Depth	Reading	Date
1.59m	2	-
1.641m	1	-

Date logged
24/04/2017
 Logged
JLM
 Checked

Remarks
 GW82 Terminated at 5.0m - Target Depth
 NDD = Non Destructive Digging

Driller Chadwick Geotechnics
 Drill Rig
 Started 12/04/2017
 Finished 24/04/2017



Appendix H

Groundwater Gauging Forms

Site Contamination Analysis – Water Level Data Sheet

Project Name: Fishermans Bend Employment Precinct	Instrument Model:
Project Number: 60537182	
Recorded By: Megan Williams and Jacob Muller	
Date: 8 May 2017	

Bore Id	Time	Depth to Water 1 st Reading	Stick Up	Total Depth of Well	Depth to Product	Comments
GW77	10.00	1.860		4.91		Gatic flooded. No odour.
GW80	10.30	1.586		4.36		No odour.
GW81	10.45	1.979		4.61		No odour.
GW73	11.00	2.367		4.56		No odour.
GW74	11.15	2.236		4.09		No odour. Cap damaged.
GW75	11.30	2.667		4.15		No odour.
GW72	11.45	2.408		3.94		No odour.
GW62	11.55	1.624		4.22		No odour.
GW67	12.05	1.753		4.0		No odour.
GW43	12.20	1.836		4.46		No odour.
GW54	1.30	3.028		4.76		No odour.
GW50		2.946		4.17		No odour.
GMW03	11.15	1.809		3.44		No odour.
GW40A/C	10.10	1.664		3.86		No odour. Low turbidity.
GW39	10.36	1.534		6.74		No odour. Low turbidity.
GW41	10.45	1.578		3.77		No odour. Low turbidity.
GW47	11.10	1.696		3.19		No odour. Low turbidity.
GW46	11.20	2.167		3.96		No odour. Low turbidity.
GW52	11.39	2.273		3.92		No odour. Low turbidity.
GW51	11.45	1.944		3.27		No odour. Low turbidity.
GW53	12.02	2.481		3.82		No odour. Low turbidity.
GW48	12.13	2.060		3.69		No odour. Low turbidity.
GW61	12.19	1.321		4.01		'Garbage odour'. Turbid.
GW65	12.30	3.417		4.96		'Garbage odour'. Turbid.
GW45	13.16	2.264		5.03		Moderate turbidity. Sulfur odour.
GW44	13.54	2.595		6.14		Moderate turbidity. Sulfur odour.

*Based on the data collected in the groundwater sampling event undertaken during the same week of gauging, it appears that the SWL gauged at location GW20 (above) on 16 Nov 2015 is likely to be a reading error. Please note that AECOM has therefore used the gauging data collected during sampling from GW20 when calculating the groundwater elevation.



Appendix I

Groundwater Sampling Forms

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW81					
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 8/5/2017					
General Bore Information			Parameter Info		Decontamination		Well Development or Well Sampling Event? (circle)				
Date of GW Level:		Bore Radius (mm):		Chem Kit Serial No.: 96 FLAVQ		<input checked="" type="checkbox"/> Decontaminated		Monitoring sequence followed (number in order):			
Depth to GW (m-pvc): 1.78		Screen Interval (m):		Chem Kit Model: FLM		<input type="checkbox"/> Dedicated		Gauging			
Bore Depth (m-pvc): 4.60		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable		Hydrasleeve in			
Depth to Product (m-pvc):		Cover Type (gatic/stick up):		(The correction to apply is probe dependent)		<input type="checkbox"/> Other (specify)		Hydrasleeve out			
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra		Parameters			
		Key Type (if applicable): Gatic		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)					
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		
14:36	0	1.99	CPM1	2.25	1633	6.75	-19	19.2	Dark brown, low to moderate turbidity no odour		
14:39	0.300	1.98	CPM1	1.98	1696	6.84	-32	19.40	as above		
14:42	0.6	1.98	CPM1	0.74	1691	6.85	-36	19.50	as above		
14:45	0.9	1.98	CPM1	0.33	1689	6.85	-42	19.60	"		
14:48	1.2	1.98	CPM1	0.31	1681	6.86	-48	19.50	"		
14:51	1.5	1.98	CPM1	0.33	1672	6.86	-53	19.50	"		
14:54	1.8	1.98	CPM1	0.22	1661	6.86	-58	19.60	"		
14:57	2.1	1.98	CPM1	0.21	1652	6.87	-62	19.60	"		
15:00	2.4	1.98	CPM1	0.21	1649	6.87	-66	19.60	"		
PARAMETERS STABLE ~ WELL SAMPLED											
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	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.				
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 250 mL Plastic Green							
		1 yellow	1 purple								
		1 orange	2 Green								
Approval and Distribution											
Fieldwork Staff Signature			Date			Checker Name and Signature			Date		
			9.5.17						9.5.17		
Project Manager Signature			Date			Distribution: Project Central File					

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: 5W80				
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date:				
General Bore Information			Parameter Info.		Decontamination		Well Development or Well Sampling Event? (circle)			
Date of GW Level: 3/5/17	Bore Radius (mm):	Chem Kit Serial No.: FLM90VQ	<input checked="" type="checkbox"/> Decontaminated		<input type="checkbox"/> Low Flow Pump rate:		Monitoring sequence followed (number in order):			
Depth to GW (m-pvc): 1.58	Screen Interval (m):	Chem Kit Model: FLM	<input type="checkbox"/> Dedicated		Intake depth:		Hydrasleeve Size:			
Bore Depth (m-pvc): 3-20	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve		Hydrasleeve Type:			
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		Sampling Depth (m-pvc): Gauging			
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole			<input type="checkbox"/> Other (specify)		Hydrasleeve Install time: Hydrasleeve in			
	Key Type (if applicable):	<input type="checkbox"/> Retrieved					Sampling Start Time: Hydrasleeve out			
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):		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	
16:04	0	1.58	CLM 1	3.31	1102	6.93	-48	18.0	moderate turbidity, no odour	
16:08	0.30	1.58	CLM 1	1.58	1128	6.71	-31	18.5	as above	
16:11	0.60	1.58	CLM 1	1.30	1143	6.61	-28	18.7	as above	
16:14	0.90	1.58	CLM 1	1.01	1150	6.56	-19	18.8	"	
16:17	1.20	1.58	CLM 1	0.76	1155	6.48	-14	18.90	"	
16:20	1.56	1.58	CLM 1	0.62	1157	6.43	-11	18.90	"	
16:23	1.80	1.58	CLM 1	0.51	1156	6.36	-8	18.90	"	
16:26	2.10	1.58	CLM 1	0.49	1160	6.33	-7	19.00	"	
16:29	2.4	1.58	CLM 1	0.48	1161	6.29	-5	19.00	as	
		Parameters stable		Stable		Well sampled				
16:32	2.7	1.58	CLM 1	0.48	1163	6.28	-3	19.00		
		Parameters stable		Stable		Well sampled				
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:		2 x 40 mL Vial (HCl)	1 x 60 mL Ferrous	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
			3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 250 mL Plastic					
				1 Purple	1 Orange Plastic					
					1 Yellow					
Approval and Distribution										
Fieldwork Staff Signature			Date		Checker Name and Signature			Date		
			9.5.17					9.5.17		
Project Manager Signature			Date		Distribution: Project Central File					

710
65

FQM - Groundwater Sampling and Purging Record

PID 5-1

Project Name:	Fishermens Bend	Project Number:	60537182	PM Name:	Averyll Coyne	Bore ID:	GW 67
Client:	EPA	Project Location:	Employment Precinct	Fieldwork Staff:	Megan Williams / Jacob Muller	Sample Date:	9.5.17
General Bore Information		Parameter Info.		Decontamination	Sampling Method		Well Development or Well Sampling Event? (circle)
Date of GW Level:	9.5.17	Bore Radius (mm):	Chem Kit Serial No.: 90111111	<input checked="" type="checkbox"/> Decontaminated	<input checked="" type="checkbox"/> Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	1.77	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth: 3 m	Hydrasleeve Type:	
Bore Depth (m-pvc):	4.00	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):		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): Hex	<input checked="" 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
9.16	1	1.77	CM1	0.29	1605	7.35	-44	18.2	Dark Brown, mod turb, no od.
9.19	1.3	1.77	CM1	0.10	1652	7.37	-75	18.6	" " "
9.22	1.6	1.77	CM1	0.07	1693	7.37	-91	18.9	" " "
9.25	1.9	1.76	CM1	0.08	1711	7.39	-99	19.0	" " "
9.28	2.2	1.74	CM1	0.05	1720	7.39	-104	19.1	" " "
9.31	2.5	1.76	CM1	0.06	1714	7.38	-107	19.2	" " "
PARAMETERS				STABLE		WELL		SAMPLED.	

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	2 x 60 mL metals (HNO ₃)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 250 mL Plastic		
			1 yellow	1 purple		
			1 orange	2 grey		

Approval and Distribution			
Fieldwork Staff Signature	1/5/17	Checker Name and Signature	10.6.17
	Date		Date
Project Manager Signature	10.5.17		
	Date		

Distribution: Project Central File

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	Fishermens Bend	Project Number:	60537182	PM Name:	Averyll Coyne	Bore ID:	GW57
Client:	EPA	Project Location:	Employment Precinct	Fieldwork Staff:	Megan Williams / Jacob Muller	Sample Date:	15/17
General Bore Information			Parameter Info.		Decontamination		Well Development or Well Sampling Event? (circle)
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	90FLM V	<input type="checkbox"/> Decontaminated	<input checked="" type="checkbox"/> Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 1.22	Screen Interval (m):	Chem Kit Model:		<input checked="" type="checkbox"/> Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc): 1.59	Casing Radius (mm): 50	Corrected Redox: Y / N		<input type="checkbox"/> Disposable	<input checked="" type="checkbox"/> Bailer	<input type="checkbox"/> Hydrasleeve	Gauging
Depth to Product (m-pvc):	Cover Type (gate/stick up):	(The correction to apply is probe dependent)		<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	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 checked="" type="checkbox"/> Retrieved					Parameters
Calculated bore volume (L): 2	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
	0	1.22	-	1.57	1065	6.86	-72	14.3	Dark brown, low turb, slight organic odour
	2	1.22		1.57	1128	6.94	-80	14.3	
	3			1.59	1001	6.92	-68	14.8	Dark brown as above
	10	1.52		1.07	1112	6.89	-57	18.8	
	15	1.34		1.49	1112	6.84	-51	18.8	as above, becomes dogrey
		RECHARGED		70	1.23	m b to c			
	16	1.23		1.72	1115	6.15	-41	18.3	
	18			1.38	1117	6.96	-45	18.5	
				1.39	1126	6.13	-46	18.6	
PARAMETERS STABLE WELL 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	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. Bottom to be measured @ 2.25 after 10 L removed.	
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 250 mL Plastic				
		1 Yellow	1 Purple					
		1 Orange						

Approval and Distribution			
Fieldwork Staff Signature	Date	Checker Name and Signature	Date
<i>[Signature]</i>	10.5.17	<i>[Signature]</i>	10.5.17
Project Manager Signature	Date	Distribution: Project Central File	
<i>[Signature]</i>			

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW82			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 9/5/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 4.60 9/5/17		Bore Radius (mm):		Chem Kit Serial No.: 90FLMUSC		<input checked="" type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 1.60		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 4.55		Casing Radius (mm): 50		Corrected Redox: Y / N		<input type="checkbox"/> Disposable			
Depth to Product (m-pvc): -		Cover Type (gatic/stop):		(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 type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
		Key Type (if applicable): Hex		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)			
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. (µm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
14.19	0	1.59	CPM1	2.99	2300	6.94	76	18.7	Brown, low turb, no od. as above ↓ ↓ ↓ ↓ ↓
14.22	0.3	1.59	CPM1	1.30	2400	6.67	78	18.8	
14.25	0.60	1.59	CPM1	0.96	2440	6.49	80	19.0	
14.27	0.90	1.62	CPM1	0.82	2460	6.42	81	18.90	
14.30	1.26	1.59	CPM1	0.67	2500	6.36	81	18.90	
14.33	1.50	1.59	CPM1	0.63	2550	6.31	80	18.90	
14.36				0.59	2576	6.32	80	18.90	
PARAMETERS				STABLE		WELL		SAMPLED	
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:	1 x 40 mL Vial (HCl)	1 x 60 mL Ferrous	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 60 mL Plastic					
			1 Purple	1 Yellow					
Approval and Distribution									
Fieldwork Staff Signature: <i>Jacob Muller</i>		Date: 9/5/17		Checker Name and Signature: <i>[Signature]</i>		Date: 10-5-17			
Project Manager Signature: <i>[Signature]</i>		Date: 10-5-17		Distribution: Project Central File					

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

PID 0.5

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: 4W43	
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 7/5/17	
General Bore Information				Parameter Info.		Decontamination	
Date of GW Level: 7.5.17		Bore Radius (mm):		Chem Kit Serial No.: 90FLMVA		<input checked="" type="checkbox"/> Decontaminated	
Depth to GW (m-pvc): 1.86		Screen Interval (m):		Chem Kit Model: WQM		<input checked="" type="checkbox"/> Low Flow Pump rate:	
Bore Depth (m-pvc): 4.42		Casing Radius (mm): 50		Corrected Redox: Y / N		Intake depth:	
Depth to Product (m-pvc):		Cover Type (gatic/stick up):		(The correction to apply is probe dependent)		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve	
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra	
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)	
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. (µS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10.59	1	1.86	CPM2	3.22	752	6.29	34	18.3	BROWN, LOW TURB, NO OD
11.02	1.6	1.85	CPM2	2.01	798	6.17	36	18.8	" " "
11.06	2.2	1.85	CPM2	1.38	827	6.03	40	19.1	" low-mod turb no od
11.09	2.8	1.86	CPM2	1.04	843	5.95	44	19.1	Brown, low-mod turb, no od
11.12	3.4	1.86	CPM1	0.90	864	5.90	46	19.2	" " "
11.15	3.7	1.86	CPM1	0.86	866	5.89	49	18.9	" " "
11.18	4.0	1.86	CPM1	0.96	869	5.89	48	18.9	" " "
PARAMETERS					STABLE		WELL 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	2	x 60 mL metals (HNO ₃)	Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
		3	x 40 mL Vial (H ₂ SO ₄)	1	x 100 mL Amber			
		1	Purple	1	Yellow			
		1	Orange					

Approval and Distribution			
Fieldwork Staff Signature	7.5.17	Checker Name and Signature	10.5.17
Project Manager Signature	10.5.17		

Distribution: Project Central File

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW76					
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 10/5/17					
General Bore Information				Parameter Info.		Decontamination					
Date of GW Level: 10/5/17		Bore Radius (mm):		Chem Kit Serial No.: FLM90		<input checked="" type="checkbox"/> Decontaminated					
Depth to GW (m-pvc): 1.999		Screen Interval (m):		Chem Kit Model: MV3L		<input type="checkbox"/> Dedicated					
Bore Depth (m-pvc): 5.89		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable					
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 type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra					
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)					
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		
10:52	0	2.00	CPM1	2.33	1620	7.29	-42	21.60	Low-Moderate turbidity / no odour		
10:55	0.30	2.00	CPM1	1.91	1842	7.30	-55	21.80	"		
10:58	0.60	2.00	CPM1	1.60	2054	7.31	-70	21.80	"		
10:01	0.90	2.00	CPM1	1.14	2133	7.31	-75	21.80	"		
10:04	1.20	2.00	CPM1	0.86	2199	7.30	-81	21.80	"		
11:07	1.50	2.00	CPM1	0.84	2207	7.30	-83	21.80	"		
11:10	1.80	2.00	CPM1	0.79	2215	7.30	-86	21.80	"		
		Parameters		Stable	hole	Sampled			"		
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	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.				
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 200 mL Plastic			PIB 0.02 0.20				
			1 Purple	1 Orange							
				1 Yellow							
Approval and Distribution											
Fieldwork Staff Signature: <i>[Signature]</i>			Date: 10/5/17			Checker Name and Signature: <i>[Signature]</i>			Date: 11/5/17		
Project Manager Signature: <i>[Signature]</i>			Date: 11/5/17			Distribution: Project Central File					

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW37			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 10/5/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level:		Bore Radius (mm):		Chem Kit Serial No.: FLM40WSC		<input checked="" type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 1.845		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 4.90		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable			
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 type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)			
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
9:06	0	1.87	CPM	-0.09	697	7.37	84	18.40	low turbidity, grey brown, no odour as above as above
9:09	0.30	1.86	CPM1	-0.09	645	7.37	64	18.80	
9:12	0.60	1.86	CPM1	0.09	607	7.38	34	19.10	
9:15	0.90	1.87	CPM1	0.09	608	7.37	-9	19.20	
9:18	1.20	1.87	CPM1	0.09	618	7.35	-28	19.50	
9:21	1.50	1.87	CPM1	0.09	636	7.34	-49	19.60	
9:24	1.8	1.87	CPM1	0.08	652	7.31	-56	19.70	
9:27	2.10	1.87	CPM1	0.08	804	7.18	-64	19.70	
9:30	2.40	1.87	CPM1	0.09	809	7.14	-69	19.80	
9:33	2.70	1.87	CPM1	0.08	834	7.14	-72	19.80	
	Parameters		Stable	Hole		Sampled			
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	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. PID 0.10 0.10		
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 50 mL Plastic					
			1 Purple Plug	1 Orange Plastic					
				1 Yellow Plastic					
Approval and Distribution									
Fieldwork Staff Signature: <i>Jacob Muller</i>		Date: 10/5/17		Checker Name and Signature: <i>[Signature]</i>		Date: 11-5-17			
Project Manager Signature: <i>[Signature]</i>		Date: 11-5-17		Distribution: Project Central File					

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: BW 74			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 10/5/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 10/5/17		Bore Radius (mm):		Chem Kit Serial No.: FLM90		<input checked="" type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 2.232		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 4.10		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable			
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 type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)			
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
13:13	0	2.23	CPM1	1.11	1896	7.05	-63	22.4	Moderate to high turbidity / no odour
13:16	0.3	2.23	CPM1	0.52	1966	7.02	-68	22.4	
13:19	0.6	2.24	CPM1	0.36	1980	7.00	-71	22.3	as above
13:22	0.90	2.23	CPM1	0.26	1954	6.98	-74	22.30	
13:25	1.20	2.23	CPM1	0.16	1914	6.96	-76	22.30	
13:28	1.50	2.23	CPM1	0.16	1861	6.97	-77	22.20	
13:31	1.80	2.24	CPM1	0.15	1929	6.95	-78	22.20	
13:34	2.10	2.23	CPM1	0.16	1826	6.94	-79	22.20	
Parameters stable sampled									
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	2	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. PID 0.1 ppm	
		3	x 40 mL Vial (H ₂ SO ₄)	1	x 100 mL Amber	1	x 250 mL Plastic		
			1	Purple	1	Orange			
					1	Yellow			
Approval and Distribution									
Fieldwork Staff Signature: <i>Jacob Muller</i>		Date: 10/5/17		Checker Name and Signature: <i>[Signature]</i>		Date: 10/5/17			
Project Manager Signature: <i>[Signature]</i>		Date: 10/5/17		Distribution: Project Central File					

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

low flow operated by Golder Associates

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: 5W42 AC					
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 10.5.17					
General Bore Information			Parameter Info.		Decontamination		Sampling Method		Well Development or Well Sampling Event? (circle)		
Date of GW Level: 10.5.17	Bore Radius (mm):	Chem Kit Serial No.:	<input checked="" type="checkbox"/> Decontaminated		<input checked="" type="checkbox"/> Low Flow Pump rate: 1m2		Hydrasleeve Size:		Monitoring sequence followed (number in order):		
Depth to GW (m-pvc): 2.314	Screen Interval (m): 3.7-2.7	Chem Kit Model:	<input type="checkbox"/> Dedicated		Intake depth:		Hydrasleeve Type:				
Bore Depth (m-pvc): 3.70	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 (gate/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"/> Retrieved		<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):					
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		
10.46		See	Golder	field	sheet	for	stabilizing	parameters			
Final Parameters 11:27				0.36	462.6	5.39	-10.1	18.5	as assessed by Golder. light yellow, no odour, m-turbidity		
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: metals, toc	Unfiltered: metals	x 40 mL Vial (HCl)	x 60 mL Ferrous	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. low flow operated by Golder Associates for geotech low turbidity - mw				
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 50 mL Plastic							
		1 yellow	1 purple	1 Blue							
		1 orange									
Approval and Distribution											
Fieldwork Staff Signature: <i>[Signature]</i>		Date: 10.5.17		Checker Name and Signature: <i>[Signature]</i>		Date: 10.5.17					
Project Manager Signature: <i>[Signature]</i>		Date: 10.5.17		Distribution: Project Central File							

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

(DSTO ID 45)

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: <u>GMW83</u>			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: <u>11/5/17</u>			
General Bore Information			Parameter Info.		Decontamination	Sampling Method		Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<u>FLM9C</u>	<input checked="" type="checkbox"/> Decontaminated	<input checked="" type="checkbox"/> Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):		
Depth to GW (m-pvc): <u>1.921</u>	Screen Interval (m):	Chem Kit Model:	<u>MV5C</u>	<input type="checkbox"/> Dedicated	Intake depth:	Hydrasleeve Type:			
Bore Depth (m-pvc): <u>2.87</u>	Casing Radius (mm):	Corrected Redox:	Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	<u>Gauging</u>		
Depth to Product (m-pvc): <u>/</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): <u>/</u>	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
10:50	0	2.96	CPM1	4.98	1552	6.13	101	18.30	Low turbidity / no odour
10:53	0.30	2.96	CPM1	2.52	978	6.00	96	19.20	as above
10:56	0.60	2.97	CPM1	1.96	735	5.90	97	19.50	as above
10:59	0.90	2.95	CPM1	1.52	514	5.89	95	19.70	" "
11:02	1.20	1.96	CPM1	1.22	409	5.90	96	19.80	" "
11:05	1.50	1.95	CPM1	1.04	346	5.91	98	19.90	" "
11:08	1.80	1.96	CPM1	1.07	334	5.91	100	19.90	
11:11	2.10	1.95	CPM1	1.05	322	5.93	103	19.90	
11:14	2.40	1.96	CPM1	1.00	319	5.93	106	19.96	
Parameters stable hole sampled									
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	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 500 mL Plastic					
			1 Purple	1 orange plastic					
				1 yellow plastic					
Approval and Distribution									
Fieldwork Staff Signature: <u>Jacob Muller</u>		Date: <u>11/5/17</u>		Checker Name and Signature: <u>[Signature]</u>		Date: <u>12-5-17</u>			
Project Manager Signature: <u>[Signature]</u>		Date: <u>12-5-17</u>		Distribution: Project Central File					

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend Employemnt		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GWS1				
Client: EPA		Project Location: Fishermens Bend, various		Fieldwork Staff: Navjot Kaur		Sample Date: 11/5/17				
General Bore Information				Parameter Info.		Decontamination				
Date of GW Level: 11/5		Bore Radius (mm):		Chem Kit Serial No.:		<input type="checkbox"/> Decontaminated				
Depth to GW (m-pvc): 1.970		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated				
Bore Depth (m-pvc): 3.29		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable				
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 type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra				
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)				
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 μ S/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity	
15:52	0.50	1.975	20:10	2.5	3.49	6.69	11.0	17.8	Highly turbid, NFO	
15:55	1.0	1.985	20:10	1.3	3.59	6.35	24	18.0	"	
15:58	1.50	1.985	20:10	0.92	3.72	6.16	33	18.0	"	
16:01	2.0	1.985	20:10	0.91	3.88	6.08	39	18.0	"	
16:04	2.50	1.985	20:10	0.33	3.86	6.06	41	18.0	"	
16:07	3.0	1.985	20:10	0.34	3.90	6.03	43	18.0	"	
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: 2	Unfiltered: 10	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						
		2 PFAS								
Approval and Distribution										
Fieldwork Staff Signature:			Date: 12.5.17		Checker Name and Signature:			Date: 12.5.17		
Project Manager Signature:			Date:		Distribution: Project Central File					

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: Gw62				
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 11/5/17				
General Bore Information				Parameter Info.		Decontamination				
Date of GW Level: 11/5/17		Bore Radius (mm):		Chem Kit Serial No.: AM90		<input checked="" type="checkbox"/> Decontaminated				
Depth to GW (m-pvc): 1.651		Screen Interval (m):		Chem Kit Model: MVSL		<input type="checkbox"/> Dedicated				
Bore Depth (m-pvc): 4.23		Casing Radius (mm):		Corrected Redox: Y N		<input type="checkbox"/> Disposable				
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 type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra				
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)				
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 μ S/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity	
9:09	0	1.66	CPM1	2.13	7110	7.22	158	16.00	Low to moderate turbidity / no odour	
9:12	0.30	1.67	CPM1	1.10	6770	7.21	140	16.70	as above	
9:15	0.60	1.66	CPM1	0.94	6780	7.21	135	17.10		
9:18	0.90	1.66	CPM1	0.74	6800	7.21	130	17.40		
9:21	1.20	1.66	CPM1	0.56	6810	7.22	121	17.60		
9:24	1.50	1.66	CPM1	0.41	6800	7.22	113	17.60		
9:27	1.80	1.66	CPM1	0.79	6810	7.23	114	17.70		
	Parameters		stable	Well	Sampled					
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.			
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	x 50 mL Plastic			P10 Q10			
			1 Purple Plastic	1 Orange Plastic						
				1 Yellow "						
Approval and Distribution										
Fieldwork Staff Signature: <i>[Signature]</i>			Date: 11/5/17		Checker Name and Signature: <i>[Signature]</i>			Date: 12.5.17		
Project Manager Signature: <i>[Signature]</i>			Date: 12.5.17		Distribution: Project Central File					

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GMW03			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 11.5.17			
General Bore Information			Parameter Info.		Decontamination		Well Development or Well Sampling Event? (circle)		
Date of GW Level: 11.5.17		Bore Radius (mm):		Chem Kit Serial No.:		<input checked="" type="checkbox"/> Decontaminated		Sampling Method	
Depth to GW (m-pvc): 1.80		Screen Interval (m):		Chem Kit Model: 90FLMVR		<input type="checkbox"/> Dedicated		Intake depth: 2.4	
Bore Depth (m-pvc): 3.44		Casing Radius (mm):		Corrected Redox: Y / N		<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)		Hydrasleeve Size:	
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve		Hydrasleeve Type:	
Key Type (if applicable):				<input type="checkbox"/> Retrieved		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra		Sampling Depth (m-pvc):	
						<input type="checkbox"/> Other (specify)		Hydrasleeve Install time:	
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):		Sampling Start Time:	
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
11:39	1	1.83	CPI	0.46	946	7.19	-104	20.5	Grey, low turb, black particulates, no odour, light sheen
11:42	1.3	1.82	CPI	0.18	950	7.20	-115	20.8	as above
11:45	1.6	1.82	CPI	0.06	949	7.23	-120	21.0	Dark brown/black, black particulates, low turb, no odour, sheen.
11:48	1.9	1.82	CPI	0.06	945	7.23	-120	21.1	as above with HC odour
11:51	2.2	1.82	CPI	0.01	938	7.21	-118	21.1	as above
PARAMETERS					STABLE		WELL SAMPLED		
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: metals, toc	Unfiltered: metals, toc	3 x 40 mL Vial (HCl)	1 x 60 mL Ferrous	2 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 Yellow	1 High						
		1 Orange							
Approval and Distribution									
Fieldwork Staff Signature		Date: 11.5.17		Checker Name and Signature		Date: 12.5.17			
Project Manager Signature		Date: 12.5.17		Distribution: Project Central File					

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend				Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: MW1371-02		
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 11/5/17				
General Bore Information			Parameter Info.		Decontamination		Sampling Method		Hydrasleeve info.	
Date of GW Level: 11/5/17		Bore Radius (mm): 50mm		Chem Kit Serial No.: FLM90		<input checked="" type="checkbox"/> Decontaminated		<input checked="" type="checkbox"/> Low Flow Pump rate:		Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 2.648		Screen Interval (m):		Chem Kit Model: MVSC		<input type="checkbox"/> Dedicated		Intake depth:		Hydrasleeve Type:
Bore Depth (m-pvc): 3.65		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):		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	
15:40	0	2.65	CPM1	1.69	929	6.51	-28	18.50	Moderate turbidity, Brown brange slight Diesel odour	
15:43	0.30	2.66	CPM1	0.92	1434	6.32	-31	19.00	low turbidity, no odour	
15:46	0.60	2.65	CPM1	0.58	1439	6.24	-30	19.10	as above	
15:49	0.90	2.65	CPM1	0.36	1447	6.20	-28	19.10	as above	
15:52	1.20	2.65	CPM1	0.27	1449	6.18	-28	19.10	as above	
15:55	1.50	2.65	CPM1	0.25	1452	6.16	-29	19.20	as above	
15:58	1.80		CPM1	0.24	1451	6.16	-30	19.20	as above	
Parameters stable hole sampled										
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		2 x 60 mL metals (HNO ₃)		Bore volume calculation, bore condition, fate of tubing, redox correction etc. Gatic full of water carefully PID 0-20 ppm emptied		
		3 x 40 mL Vial (H ₂ SO ₄)		1 x 100 mL Amber		1 x 250 mL Plastic				
				1 purple		1 orange				
						1 yellow				
Approval and Distribution										
Fieldwork Staff Signature: <i>Jacob Muller</i>		Date: 11/5/17		Checker Name and Signature: <i>[Signature]</i>		Date: 12.5.17				
Project Manager Signature: <i>[Signature]</i>		Date: 12.5.17		Distribution: Project Central File						

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: MW1333-02			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date:			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 11/5/17	Bore Radius (mm):	Chem Kit Serial No.: 90FLM	<input checked="" type="checkbox"/> Decontaminated	<input checked="" type="checkbox"/> Low Flow Pump rate:	Hydrasleeve info:		Monitoring sequence followed (number in order):		
Depth to GW (m-pvc): 2.082	Screen Interval (m):	Chem Kit Model: MVSC	<input type="checkbox"/> Dedicated	Intake depth:	Hydrasleeve Size:	Gauging			
Bore Depth (m-pvc): 5.29	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve	Hydrasleeve Type:		Hydrasleeve in		
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	Sampling Depth (m-pvc):	Hydrasleeve out			
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Other (specify)	Hydrasleeve Install time:		Parameters		
	Key Type (if applicable):	<input type="checkbox"/> Retrieved			Sampling Start Time:				
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
12:22	0	2.10	CPM1	2.57	2150	6.78	25	19.80	Moderate grey turbidity, no odour
12:25	0.30	2.10	CPM1	1.14	2221	6.74	9	20.20	low turbidity, no odour
12:28	0.60	2.10	CPM1	1.04	2230	6.77	0	20.30	ns above
12:31	0.90	2.10	CPM1	0.99	2230	6.79	-4	20.20	" "
12:34	1.20	2.10	CPM1	0.85	2230	6.82	-9	20.10	" "
12:37	1.50	2.10	CPM1	0.92	2230	6.83	-13	20.10	" "
12:40	1.80	2.10	CPM1	0.87	2220	6.85	-12	20.10	" "
	Parameters Stable		Hole sampled						
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.	
		2 x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic					
		2 PFAS	1 Purple	1 yellow					
			1 orange						
Approval and Distribution									
Fieldwork Staff Signature: <i>Jacob Muller</i>		Date: 12/5/17		Checker Name and Signature: <i>[Signature]</i>		Date: 12.5.17			
Project Manager Signature: <i>[Signature]</i>		Date: 12.5.17		Distribution: Project Central File					

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: DAMWS-02				
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 11/5/17				
General Bore Information				Parameter Info		Decontamination				
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	90FLMVQR	<input checked="" type="checkbox"/> Decontaminated	<input checked="" type="checkbox"/> Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):			
Depth to GW (m-pvc): 1.161	Screen Interval (m):	Chem Kit Model:		<input type="checkbox"/> Dedicated	Intake depth:	Hydrasleeve Type:				
Bore Depth (m-pvc): 2.47	Casing Radius (mm): 30	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 checked="" 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	
14.39	1	1.18	CPM1	0.92	661	6.65	-28	19.7	Grey, black particulates, low turb, no od.	
14.43	1.4	1.18	CPM1	0.43	671	6.63	-35	19.8		
14.46	1.7	1.20	CPM1	0.26	732	6.65	-51	19.8	Brown, v. low turb, black particulates, no od.	
14.49	2.0	1.20	CPM1	0.19	779	6.70	-62	19.8	as above	
14.52	2.3	1.20	CPM1	0.07	828	6.73	-71	19.7	"	
14.56	2.6	1.21	CPM1	0.05	868	6.77	-77	19.7	"	
14.59	2.9	1.20	CPM1	0.05	917	6.79	-82	19.6	"	
15.02	3.1	1.20	CPM1	0.02	950	6.82	-87	19.6	"	
15.05	3.4	1.19	CPM1	0.01	964	6.84	-90	19.6	"	
15.09	3.7	1.20	CPM1	0.00	988	6.86	-92	19.6	"	
		PARAMETERS		STABLE						
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	2	x 60 mL metals (HNO ₃)					
loc metals	metals	3	x 40 mL Vial (H ₂ SO ₄)	1	x 100 mL Amber				1	x 250mL Plastic
		1	Yellow	1	Purple					
		1	Orange	2	Grey					
Approval and Distribution										
Fieldwork Staff Signature		Date	Checker Name and Signature			Date				
<i>A. Coyne</i>		12.5.17	<i>A. Coyne</i>			12.5.17				
Project Manager Signature		Date	Distribution: Project Central File							

ANZ
FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend Employemnt		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW48			
Client: EPA		Project Location: Fishermens Bend, various		Fieldwork Staff: Navjot Kaur		Sample Date: 11/5/17			
General Bore Information			Parameter Info.		Decontamination		Well Development or Well Sampling Event? (circle)		
Date of GW Level: 11/5		Bore Radius (mm): 50		Chem Kit Serial No.:		<input type="checkbox"/> Decontaminated		Sampling Method	
Depth to GW (m-pvc): 2.050		Screen Interval (m): ?		Chem Kit Model:		<input type="checkbox"/> Dedicated		Intake depth: 3	
Bore Depth (m-pvc): 3.70		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve	
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	
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Other (specify)		Hydrasleeve Install time:	
		Key Type (if applicable):		<input type="checkbox"/> Retrieved				Sampling Start Time:	
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):		Monitoring sequence followed (number in order):	

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
12:22	0.50	2.065	20:10	3.0	1750	6.6	50	19.0	Highly turbid, brownish, nvo
12:23	1.0	2.065	"	1.2	1830	6.5	32	19.0	
12:24	1.50	2.065	"	1.0	1820	6.5	31	19.0	
12:30	2.0	2.065	"	0.72	1810	6.6	26	20.0	
12:33	2.50	2.065	"	0.63	1790	6.6	21	20.0	
12:36	3.0	2.065	"	0.60	1770	6.6	20	20.0	
12:40	3.50	2.065	"	0.60	1770	6.6	20	20.0	"

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 Commts	
Field Filtered: 2 FF	Unfiltered: 8 UF	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)	QC01 - Dup QC02 - Triplicate		Bore volume calculation, bore condition, fate of tubing, redox correction etc.	
= 10 bottles		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>	12-5-17	<i>[Signature]</i>	12-5-17
Project Manager Signature	Date	Distribution: Project Central File	
<i>[Signature]</i>			

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW73			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 11.5.17			
General Bore Information			Parameter Info		Decontamination		Well Development or Well Sampling Event? (circle)		
Date of GW Level: 2.63	Bore Radius (mm):	Chem Kit Serial No.: 90FLMUR	<input checked="" type="checkbox"/> Decontaminated		<input checked="" type="checkbox"/> Low Flow Pump rate: 83.6		Hydrasleeve info.		
Depth to GW (m-pvc): 9.265	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated		Intake depth: 3.6		Monitoring sequence followed (number in order):		
Bore Depth (m-pvc): 4.60	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: gate/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"/> Retrieved		<input type="checkbox"/> Other (specify)		Sampling Start Time: Hydrasleeve out		
	Key Type (if applicable): Hex						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
9.18	2	2.68	CPM2	0.26	1320	6.88	-7	21.0	Brown, low-mod turb, no od. as above ↓
9.23	2.5	2.64	CPM1	0.19	1187	6.99	-44	21.8	
9.26	2.8	2.64	CPM1	0.15	1161	7.00	-51	21.9	
9.29	3.1	2.65	CPM1	0.17	1124	7.00	-63	21.9	
9.32	3.4	2.65	CPM1	0.14	1100	7.00	-70	21.9	
9.35	3.7	2.64	CPM1	0.13	1085	7.02	-83	21.9	
9.38	4.0	2.65	CPM1	0.10	1065	7.02	-83	22.0	
9.41	4.3	2.64	CPM1	0.11	1060	7.02	-87	22.1	
		PARAMETERS		STABLE	WELL	SAMPLED			
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.	
Metals	Metals	3	1	1	1	1			
toc		1	1	1	1	1			
		1	2	1	1	1			
Approval and Distribution									
Fieldwork Staff Signature		Date: 11.5.17		Checker Name and Signature		Date: 12.5.17			
Project Manager Signature		Date: 12.5.17							
Distribution: Project Central File									

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend Employemnt		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW41				
Client: EPA		Project Location: Fishermens Bend, various		Fieldwork Staff: Navjot Kaur		Sample Date: 11/5/17				
General Bore Information		Parameter Info.		Decontamination		Sampling Method		Hydrasleeve info.		
Date of GW Level: 11/5	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	<input type="checkbox"/> Low Flow Pump rate: 20:10		Hydrasleeve Size:		Monitoring sequence followed (number in order):		
Depth to GW (m-pvc): 1.590	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Intake depth: 2.5m		Hydrasleeve Type:				
Bore Depth (m-pvc): 3.740	Casing Radius (mm):	Corrected Redox: Y 1 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	
14:26	0.50	1.605	20:10	1.0	524	7.15	-10	18.9	Highly turbid, greyish brownish, NVO	
14:29	1.0	1.605	20:10	0.5	500	7.10	-14	19.2	y	
14:32	1.50	1.610	20:10	0.4	485	7.10	-15	19.4	y	
14:35	2.0	1.620	20:10	0.2	480	7.05	-16	19.5	y	
14:38	2.50	1.620	20:10	0.18	480	7.05	-17	19.5	y	
14:41	3.0	1.620	20:10	0.16	480	7.03	-18	19.5	y	
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: 2	Unfiltered: 10	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						
		2 PFAS								
3 12 bottles										
Approval and Distribution										
Fieldwork Staff Signature			Date		Checker Name and Signature			Date		
[Signature]			12-5-17		[Signature]			12-5-17		
Project Manager Signature			Date		Distribution: Project Central File					
[Signature]			12-5-17							

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend Employmnt		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GWS2			
Client: EPA		Project Location: Fishermens Bend, various		Fieldwork Staff: Navjot Kaur		Sample Date: 12/5/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 12/5/17		Bore Radius (mm):		Chem Kit Serial No.:		<input type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 2.290		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 3.50		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable			
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 type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)			
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
8:17	0.5	2.295	20:10	2.1	1410	6.9	110	14.5	slightly turbid, nvo
8:20	1.0	2.295	"	2.1	1670	6.7	86	14.9	"
8:23	1.50	2.295	"	1.5	1700	6.71	60	15.2	"
8:26	2.0	2.295	"	0.55	1750	6.68	43	16.0	Getting clear
8:29	2.50	2.295	"	0.48	1738	6.64	31	16.7	"
8:32	3.0	2.295	"	0.26	1748	6.62	18	17.0	"
8:35	3.50	2.295	"	0.23	1745	6.62	5	17.2	"
8:38	4.0	2.295	"	0.13	1748	6.61	-4	17.2	"
8:41	4.5	2.295	"	0.15	1750	6.61	-5	17.2	"
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: 2	Unfiltered: 80	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)	QC 106 dup QC 107 trip		Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
= 10		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic					
Approval and Distribution									
Fieldwork Staff Signature:		Date: 15.8.17		Checker Name and Signature:		Date: 12.5.17		Distribution: Project Central File	

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend Employemnt		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW72			
Client: EPA		Project Location: Fishermens Bend, various		Fieldwork Staff: Navjot Kaur		Sample Date: 12/5/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 12/5		Bore Radius (mm):		Chem Kit Serial No.:		<input type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 2.42		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 3.98		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable			
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 type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)			
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
13:53	0.50	2.425	20/10	0.52	1010	6.30	-3	20.5	Highly turbid, NVO
13:56	1.0	2.425	20/10	0.30	950	6.25	-5	20.8	"
13:59	1.50	2.425	20/10	0.22	930	6.22	-8	20.8	"
14:02	2.0	2.425	20/10	0.08	922	6.23	-13	20.8	Getting clear
14:05	2.50	2.425	20/10	0.02	921	6.24	-20	20.8	"
14:08	3.0	2.425	20/10	0.00	920	6.25	-24	20.8	"
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)
Analyses Sampled for:		Bottles Collected			QA/QC Information		Field Comments		
Field Filtered: 2	Unfiltered: 10	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.		
0 = 12		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic					
		2 PFAS							
Approval and Distribution									
Fieldwork Staff Signature:		Date: 15.5.17		Checker Name and Signature:		Date: 15.5.17			
Project Manager Signature:		Date:		Distribution: Project Central File					

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend Employemnt		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW140A10			
Client: EPA		Project Location: Fishermens Bend, various		Fieldwork Staff: Navjot Kaur		Sample Date: 12/5/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 12/5		Bore Radius (mm): 50		Chem Kit Serial No.:		<input type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 1.707		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 3.85		Casing Radius (mm):		Corrected Redox: Y / (N)		<input checked="" type="checkbox"/> Disposable			
Depth to Product (m-pvc): -		Cover Type ((gatic) stick up):		(The correction to apply is probe dependent)		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve			
Product Thickness (m): -		Bore Locked (YES/NO):		Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)			
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 μ S/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
11:01	0.50	1.775	20:10	1.50	5.19	4.98	131	19.0	Slightly turbid, nvd
11:05	1.0	1.805	20:10	0.67	5.84	4.81	225	19.7	" "
11:08	1.5	1.795	40:20	0.36	5.15	4.74	245	19.8	Getting clear, nvd
11:12	2.00	1.795	40:20	0.25	5.17	4.72	252	" "	" "
11:15	2.85	"	"	0.18	5.15	4.70	253	" "	" "
11:20	2.5	"	"	0.13	5.13	4.69	254	" "	" "
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: 2	Unfiltered: 10	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.		
= 12 bottles, 2	PFAS	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				
		15-5-17			15-5-17				
Project Manager Signature		Date	Distribution: Project Central File						

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend Employemnt		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW75			
Client: EPA		Project Location: Fishermens Bend, various		Fieldwork Staff: Navjot Kaur		Sample Date: 12/5/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 12/5/17		Bore Radius (mm): 50		Chem Kit Serial No.:		<input type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 2.68		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 4.17		Casing Radius (mm):		Corrected Redox: Y / N		<input checked="" type="checkbox"/> Disposable			
Depth to Product (m-pvc):		Cover Type (gatic/stick up):		(The correction to apply is probe dependent)		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve			
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)			
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
14:58	0.50	2.69	20:10	1.55	759	6.71	-9	19.2	Slightly turbid, NV0
15:01	1.0	2.69	20:10	0.61	767	6.38	39	19.6	" "
15:04	1.50	2.69	20:10	0.43	777	6.27	52	19.6	Getting clear, " "
15:07	2.0	2.69	20:10	0.23	807	6.07	68	19.5	" "
15:10	2.50	2.69	20:10	0.16	825	6.06	71	19.5	" "
15:13	3.0	2.69	20:10	0.14	854 _{NV}	6.05	72	19.5	" "
15:16	3.50	2.69	20:10	0.12	893	6.04	73	19.5	" "
15:19	4.0	2.69	20:10	0.10	882	6.04	74	19.5	" "
15:22	4.50	2.69	20:10	0.10	900	6.04	74	19.5	" "
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: 2	Unfiltered: 8	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 bottles		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			
		15.5.17				15.5.17			
Project Manager Signature		Date		Distribution: Project Central File					

FQM - Groundwater Sampling and Purging Record

PAGE 1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GMW02			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 12/15/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 12/15/17	Bore Radius (mm):	Chem Kit Serial No.: FLN90	<input checked="" type="checkbox"/> Decontaminated	Sampling Method		Hydrasleeve info.			
Depth to GW (m-pvc): 1.526	Screen Interval (m):	Chem Kit Model: MUSC	<input type="checkbox"/> Dedicated	Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):			
Bore Depth (m-pvc): 2.70	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	Intake depth:	Hydrasleeve Type:				
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"/> Bailer	<input type="checkbox"/> Hydrasleeve	Sampling Depth (m-pvc):	Gauging		
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Waterra	Hydrasleeve Install time:	Hydrasleeve in		
	Key Type (if applicable):	<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)		Sampling Start Time:	Hydrasleeve out		
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):			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
9:30	0	1.40	CPM1	0.81	1145	6.95	153	17.20	Low turbidity, no odour, as above
9:33	0.30	1.76	CPM1	0.83	976	6.91	145	17.20	
9:36	0.60	1.81	CPM1	0.51	930	6.94	136	17.30	" "
9:39	0.90	1.86	CPM1	0.56	912	6.94	106	17.30	" "
9:42	1.20	1.85	CPM1	0.42	922	6.97	87	17.30	" "
9:45	1.50	1.85	CPM1	0.42	945	7.01	49	17.40	" "
9:48	1.80	1.86	CPM1	0.32	1020	7.03	41	17.50	" "
9:51	2.1	1.86	CPM1	0.50	1069	7.05	21	17.50	" "
9:53	2.4	1.86	CPM1	0.48	1130	7.08	-7	17.40	" "
9:56	2.7	1.86	CPM1	0.50	1161	7.10	-17	17.40	
9:59	3.00	1.85	CPM1	0.49	1198	7.12	-20	17.40	
10:02	3.30	1.83	CPM1	0.35	1238	7.13	-43	17.40	
10:05	3.60	1.81	CPM1	0.30	1264	7.14	-50	17.40	
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	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 250 mL Plastic			Bore not developed previously taken time to stabilize p10 0.0 ppm		
			1 Purple	1 Orange					
Approval and Distribution									
Fieldwork Staff Signature: <i>Jacob Muller</i>		Date: 11/15/17		Checker Name and Signature: <i>Averyll Coyne</i>		Date: 12-15-17			
Project Manager Signature: <i>Averyll Coyne</i>		Date: 12-15-17		Distribution: Project Central File					

FQM - Groundwater Sampling and Purging Record

PAGE 2

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GHW02 Cont.			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date:			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated		Sampling Method		Hydrasleeve info.		
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated		Low Flow Pump rate:		Monitoring sequence followed (number in order):		
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable		Intake depth:		Hydrasleeve Type:		
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"/> Bailer <input type="checkbox"/> Hydrasleeve		Sampling Depth (m-pvc):		
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole			<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra		Hydrasleeve Install time:		
	Key Type (if applicable):	<input type="checkbox"/> Retrieved			<input type="checkbox"/> Other (specify)		Sampling Start Time:		
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:			Total purged volume (L):		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
10:07	3.90	1.81	CPM1	0.32	1296	7.15	-58	17:50	low turbidity, no odour as above
10:10	4.20	1.81	CPM1	0.30	1300	7.16	-62	17:50	
10:13	4.50	1.81	CPM1	0.28	1307	7.16	-64	17:50	
	Parameters		stabilized		well		sampled		
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>Previous Page</i>	x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic					
Approval and Distribution									
<i>Jacob Muller</i>		<i>12/5/17</i>		<i>Jacob</i>		<i>13.5.17</i>			
Fieldwork Staff Signature		Date		Checker Name and Signature		Date			
<i>Jacob</i>		<i>13.5.17</i>							
Project Manager Signature		Date		Distribution: Project Central File					

FQM - Groundwater Sampling and Purging Record

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Project Name: Fishermens Bend Employemnt		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW69			
Client: EPA		Project Location: Fishermens Bend, various		Fieldwork Staff: Navjot Kaur		Sample Date: 16/5/17			
General Bore Information			Parameter Info.		Decontamination		Well Development or Well Sampling Event? (circle)		
Date of GW Level: 16/5/17		Bore Radius (mm):		Chem Kit Serial No.:		<input type="checkbox"/> Decontaminated		Sampling Method	
Depth to GW (m-pvc): 2.700		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated		Intake depth:	
Bore Depth (m-pvc): 3.80		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve	
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	
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Other (specify)		Hydrasleeve Install time:	
		Key Type (if applicable):		<input type="checkbox"/> Retrieved				Sampling Start Time:	
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):		Monitoring sequence followed (number in order):	

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	
14:05	0.5	2.705	10:60	2.67	4.13	7.66	-123	18.5	Black, Highly turbid, NVD	
14:07	1.0	2.715	10:55	1.44	4.42	7.64	-144	19.2	" " "	
14:10	1.5	2.705	40:20	1.21	4.51	7.65	-152	19.2	" " "	
14:13	2.0	2.705	20:10	1.00	4.67	7.64	-158	19.1	" " "	
14:16	2.5	2.710	20:10	0.90	4.68	7.62	-162	19.1	" " "	
14:20	3.0	2.710	20:10	0.80	4.69	7.60	-169	19.2	" " "	

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.	
1	9	x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic			<p>The well is very silty at the bottom so the total bore depth may be approx. Got 45L of water out before start sampling.</p>	
1	10							

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

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend Employemnt		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW65			
Client: EPA		Project Location: Fishermens Bend, various		Fieldwork Staff: Navjot Kaur		Sample Date: 16/5/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 16/5/17		Bore Radius (mm):		Chem Kit Serial No.:		<input type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 3.415		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 4.950		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable			
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 type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)			
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
12:42	0.5	3.41	20:10	4.0	4.25	7.13	-114	18.6	Black, highly turbid, slight HC odour.
12:45	1.0	3.41	20:10	2.17	4.23	7.03	-120	19.6	Greenish Black, "
12:48	1.5	3.41	20:10	1.20	4.22	6.72	-96	20.2	" "
12:51	2.0	3.41	20:10	0.80	4.23	6.63	-90	20.5	" "
12:54	2.5	3.41	20:10	0.62	4.22	6.61	-91	20.6	" "
12:57	3.0	3.41	20:10	0.55	4.22	6.60	-92	20.6	" "
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: 1	Unfiltered: 9	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		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic					
Approval and Distribution									
Fieldwork Staff Signature: <i>[Signature]</i>		Date: _____		Checker Name and Signature: <i>[Signature]</i>		Date: 17.5.17			
Project Manager Signature: <i>[Signature]</i>		Date: 17.5.17		Distribution: Project Central File					

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend Employemnt		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW61			
Client: EPA		Project Location: Fishermens Bend, various		Fieldwork Staff: Navjot Kaur		Sample Date: 16/5/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 16/5		Bore Radius (mm):		Chem Kit Serial No.:		<input type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 2.305		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 2.98		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable			
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 type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)			
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
11:40	0.50	2.305	20:10	2.21	5.05	7.15	-141	19.5	Slightly turbid, nvo Getting clear clear, nvo " " " "
11:43	0.51	2.305	20:10	1.70	5.26	7.18	-151	19.9	
11:46	0.50	2.305	20:10	1.35	5.41	7.19	-157	20.2	
11:49	0.0	2.305	20:10	1.18	5.45	7.18	-159	20.2	
11:51	2.50	2.305	20:10	0.98	5.48	7.18	-161	20.2	
11:54	3.0	2.305	20:10	0.85	5.46	7.18	-162	20.3	
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: 1	Unfiltered: 11	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					
		2 PFAS							
Approval and Distribution									
Fieldwork Staff Signature		Date		Checker Name and Signature		Date			
<i>[Signature]</i>		17-5-17		<i>[Signature]</i>		17-5-17			
Project Manager Signature		Date		Distribution: Project Central File					
<i>[Signature]</i>									

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW5B				
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date:				
General Bore Information				Parameter Info.		Decontamination				
Date of GW Level: 16/05/17		Bore Radius (mm):		Chem Kit Serial No.: 90FUM		<input checked="" type="checkbox"/> Decontaminated				
Depth to GW (m-pvc): 3.398		Screen Interval (m):		Chem Kit Model: MVL		<input type="checkbox"/> Dedicated				
Bore Depth (m-pvc): 2.96		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable				
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 type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve				
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra				
						<input type="checkbox"/> Other (specify)				
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	
13:33	0.0	1.41	CPM1	1.00	970	6.41	70	19.70	Very turbid, grey, no odour	
13:36	0.30	1.41	CPM1	0.48	976	6.32	74	19.70	as above	
13:39	0.60	1.41	CPM1	0.29	952	6.31	76	19.70	as above	
13:42	0.90	1.40	CPM1	0.15	935	6.33	77	19.60	Moderate to low turbidity / no odour, grey	
13:45	1.20	1.41	CPM1	0.11	948	6.34	74	19.60	as above	
13:48	1.50	1.41	CPM1	0.10	945	6.35	72	19.60	" "	
13:51	1.80	1.40	CPM1	0.11	955	6.36	71	19.60	" "	
Parameters stable hole sampled										
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	2 x 60 mL metals (HNO ₃)				Bore volume calculation, bore condition, fate of tubing, redox correction etc. PI0 0.00ppm		
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 200 mL Plastic						
			1 purple	1 yellow						
				1 orange						
Approval and Distribution										
Fieldwork Staff Signature: <i>Jacob Muller</i>		Date: 16/05/17		Checker Name and Signature: <i>Averyll Coyne</i>			Date: 17-5-17			
Project Manager Signature: <i>Jacob Muller</i>		Date: 17-5-17		Distribution: Project Central File						

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FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW54			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 16/5/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 16/5/17		Bore Radius (mm):		Chem Kit Serial No.: 90FLMVN		<input checked="" type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 3.02		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 4.75		Casing Radius (mm): 50		Corrected Redox: Y / N		<input type="checkbox"/> Disposable			
Depth to Product (m-pvc): -		Cover Type (gatic/step):		(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 type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve			
		Key Type (if applicable):		<input checked="" type="checkbox"/> Retrieved		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
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
10:59	1	3.02	CPM1	0.85	2.81	6.24	-90	16.1	dk brown, mod-high turb, no od
10:59	1.3	3.03	CPM1	0.26	2.81	6.19	-98	17.0	as above
11:05	1.6	3.02	CPM1	0.06	2.80	6.15	-104	17.5	as above
11:08	1.9	3.02	CPM1	0.0	2.78	6.14	-109	17.8	as above w. sewerage odour
11:11	2.2	3.02	CPM1	0.0	2.78	6.14	-112	17.9	as above
11:14	2.5	3.02	CPM1	0.0	2.79	6.14	-116	18.0	as above
PARAMETERS STABLE, WELL SAMPLED.									
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	2 x 60 mL metals (HNO ₃)				Bore volume calculation, bore condition, fate of tubing, redox correction etc.	
		3 x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	1 x 250 mL Plastic					
		1 yellow	1 orange	1 purple					
Approval and Distribution									
Fieldwork Staff Signature		Date: 16/5/17		Checker Name and Signature		Date: 17.5.17			
Project Manager Signature		Date: 17.5.17							
Distribution: Project Central File									

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FQM - Groundwater Sampling and Purging Record




Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: 9W50					
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 16/5/17					
General Bore Information				Parameter Info.		Decontamination					
Date of GW Level:		Bore Radius (mm):		Chem Kit Serial No.: TCMV90		<input checked="" type="checkbox"/> Decontaminated					
Depth to GW (m-pvc): 2.93		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated					
Bore Depth (m-pvc): 4.18		Casing Radius (mm): 50		Corrected Redox: Y / N		<input type="checkbox"/> Disposable					
Depth to Product (m-pvc):		Cover Type (gatic/slick 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 type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve					
Calculated bore volume (L):		Key Type (if applicable): Hex		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra					
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)	EC (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity		
12.59	1	2.94	CIM	1.03	20.92	6.82	-54	18.7	Dark Brown, low med turb, no od.		
13.01	1.3	2.94	amb	0.67	20.69	6.82	-57	18.9	as above		
13.04	1.6	2.93	CIM	0.41	20.14	6.82	-67	19.2	as above		
13.07	1.9	2.93	CIM	0.27	19.75	6.82	-68	19.2	as above		
13.10	2.2	2.93	CIM	0.21	19.74	6.82	-73	19.4	as above		
PARAMETERS STABLE						WELL SAMPLED		Dark Brown, low-med turb, no od.			
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	2 x 60 mL metals (HNO ₃)				Bore volume calculation, bore condition, fate of tubing, redox correction etc.			
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 250 mL Plastic							
		1 yellow	1 orange	1 purple							
Approval and Distribution											
Fieldwork Staff Signature		Date: 17/5/17		Checker Name and Signature		Date: 17.5.17					
Project Manager Signature		Date: 17.5.17									
Distribution: Project Central File											

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW49					
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date:					
General Bore Information				Parameter Info.		Decontamination					
Date of GW Level: 16/5/17		Bore Radius (mm):		Chem Kit Serial No.: 90FLM		<input checked="" type="checkbox"/> Decontaminated					
Depth to GW (m-pvc): 3.074		Screen Interval (m):		Chem Kit Model: MVC		<input type="checkbox"/> Dedicated					
Bore Depth (m-pvc): 7.47		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable					
Depth to Product (m-pvc):		Cover Type (gatic/stick up):		(The correction to apply is probe dependent)		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve					
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra					
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)					
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		
10:22	0	3.07	CPM1	2.53	212	6.40	41	14.90	Slight Sulphur odour, low brown turbidity as above		
10:25	0-30	3.08	CPM1	1.95	143	6.47	9	15.40			
10:28	0.60	3.08	CPM1	1.38	121	6.55	-22	15.60			
10:31	0.90	3.08	CPM1	1.12	107	6.57	-36	15.80			
10:34	1.20	3.08	CPM1	0.83	100	6.58	-50	15.90			
10:37	1.50	3.08	CPM1	0.78	99	6.54	-55	15.90			
10:40	1.80	3.08	CPM1	0.76	98	6.58	-57	16.00			
Parameters stable hole sampled											
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. p10 0.00ppm			
		x 40 mL Vial (H ₂ SO ₄)		x 100 mL Amber		x 250 mL Plastic					
		PFAS		purple		yellow					
						orange					
Approval and Distribution											
Fieldwork Staff Signature: <i>[Signature]</i>			Date: _____			Checker Name and Signature: <i>[Signature]</i>			Date: 17-5-17		
Project Manager Signature: <i>[Signature]</i>			Date: 17-5-17			Distribution: Project Central File					

ANZ
FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW47			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 16/5/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level:		Bore Radius (mm):		Chem Kit Serial No.: 90FLMVN		<input checked="" type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 1.751		Screen Interval (m):		Chem Kit Model:		<input checked="" type="checkbox"/> Low Flow Pump rate: CPM1			
Bore Depth (m-pvc): 3.22		Casing Radius (mm): 50		Corrected Redox: Y / N		<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			
Product Thickness (m): -		Bore Locked (YES/NO): YES		Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve			
		Key Type (if applicable): KEY		<input checked="" type="checkbox"/> Retrieved		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
						<input type="checkbox"/> Other (specify)			
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
8.45	1	1.78	CPM1	1.45	7.21	6.69	154	13.2	Grey, mod-high turb, no od
8.51	1.5	1.78	CPM1	2.00	12.59	6.83	131	14.4	as above
8.54	1.8	1.76	CPM1	1.25	12.76	6.84	125	14.9	as above
8.57	2.1	1.76	CPM1	0.85	12.87	6.86	118	15.2	as above, moderate turb
9.00	2.4	1.76	CPM1	0.72	13.14	6.88	110	15.4	Grey, mod turb, no od.
9.03	2.7	1.76	CPM1	0.42	13.41	6.91	104	15.4	as above
9.06	3.0	1.75	CPM1	0.43	13.60	6.92	94	15.5	as above
9.09	3.3	1.75	CPM1	0.39	13.69	6.94	83	15.3	as above
9.12	3.6	1.76	CPM1	0.31	13.79	6.94	75	15.3	as above
9.15	3.9	1.76	CPM1	0.30	13.75	6.96	63	15.5	as above
9.18	4.2	1.76	CPM1	0.25	13.95	6.97	45	15.7	as above
9.21	4.5	1.76	CPM1	0.20	13.93	6.98	24	15.5	as above
9.24	4.8	1.76	CPM1	0.18	14.00	6.97	3	15.5	as above
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: metals	Unfiltered: metals	x 40 mL Vial (HCl)	x 60 mL Ferrous	2 x 60 mL metals (HNO ₃)				Bore volume calculation, bore condition, fate of tubing, redox correction etc.	
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 250 mL Plastic					
			1 orange						
			1 yellow						
Approval and Distribution									
		16.5.17				17.5.17		Page 1/2	
Fieldwork Staff Signature		Date		Checker Name and Signature		Date			
		17.5.17							
Project Manager Signature		Date		Distribution: Project Central File					

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: 9W47			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 16/5/17			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level:		Bore Radius (mm):		Chem Kit Serial No.: 90FLMVW		<input checked="" type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 1.751		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 3.22		Casing Radius (mm): 50		Corrected Redox: Y / N		<input type="checkbox"/> Disposable			
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 type="checkbox"/> Other (specify)			
		Key Type (if applicable): Key		<input checked="" 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
09:27	5.1	1.76	1CM	0.15	14.03	6.98	-15	15.7	Grey, mod turb; no odour.
9:30	5.4	1.75	1CM	0.13	14.07	6.98	-29	15.7	as above
9:33	5.7	1.76	1CM	0.14	14.19	6.98	-45	15.3	as above
9:36	6.0	1.75	1CM	0.16	14.01	6.95	-52	15.5	as above
9:39	6.3	1.76	1CM	0.15	14.20	6.96	-67	15.7	as above
9:42	6.6	1.75	1CM	0.14	14.22	6.98	-77	15.7	as above
9:45	6.9	1.75	1CM	0.10	14.38	6.98	-90	15.8	as above
9:48	7.2	1.7	1CM	0.11	14.47	6.98	-97	15.9	as above
				Well sampled after 7.2 L removed.					
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)
Analyses Sampled for:		Bottles Collected				QA/QC Information		Field Comments	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)		x 60 mL Ferrous		2 x 60 mL metals (HNO ₃)		Bore volume calculation, bore condition, fate of tubing, redox correction etc. Page 2/2	
metals	metals	3 x 40 mL Vial (H ₂ SO ₄)		1 x 100 mL Amber		1 x 50 mL Plastic			
		1 yellow		1 Purple		1 Orange			
Approval and Distribution									
Fieldwork Staff Signature		Date: 16.5.17		Checker Name and Signature		Date: 17.5.17			
Project Manager Signature		Date: 17.5.17		Distribution: Project Central File					

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend Employemnt		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW46					
Client: EPA		Project Location: Fishermens Bend, various		Fieldwork Staff: Navjot Kaur		Sample Date: 16/5/17					
General Bore Information				Parameter Info.		Decontamination					
Date of GW Level: 16/5		Bore Radius (mm):		Chem Kit Serial No.:		<input type="checkbox"/> Decontaminated					
Depth to GW (m-pvc): 2.200		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated					
Bore Depth (m-pvc): 4.000		Casing Radius (mm):		Corrected Redox: Y / N		<input type="checkbox"/> Disposable					
Depth to Product (m-pvc):		Cover Type (gatic/stick up):		(The correction to apply is probe dependent)		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve					
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra					
		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)					
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		
10:05	0.50	2.250	20:10	6.1	1272	6.71	31	17.8	Highly turbid, NVD		
10:09	1.0	2.250	20:10	3.79	1473	6.72	26	19.7	" "		
10:12	1.50	2.250	20:10	3.26	1481	6.73	21	20.1	" "		
10:15	2.0	2.250	20:10	2.92	1485	6.75	14	20.3	Getting clear		
10:18	2.50	2.250	"	2.73	1486	6.76	7	20.4	" "		
10:21	3.0	2.250	"	2.68	1486	6.76	6	20.4	" "		
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.				
1	9	x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic							
=	10										
Approval and Distribution											
Fieldwork Staff Signature: <i>[Signature]</i>			Date: 17.5.17			Checker Name and Signature: <i>[Signature]</i>			Date: 17.5.17		
Project Manager Signature: <i>[Signature]</i>			Date: 17.5.17			Distribution: Project Central File					

FQM - Groundwater Sampling and Purging Record

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: 4W45			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 16/5/17			
General Bore Information			Parameter Info.		Decontamination		Well Development or Well Sampling Event? (circle)		
Date of GW Level:		Bore Radius (mm):		Chem Kit Serial No. 40FLMVN		<input checked="" type="checkbox"/> Decontaminated		Monitoring sequence followed (number in order):	
Depth to GW (m-pvc): 3.27		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated		Hydrasleeve Size:	
Bore Depth (m-pvc): 5.03		Casing Radius (mm): 50		Corrected Redox: Y / N		<input type="checkbox"/> Disposable		Intake depth:	
Depth to Product (m-pvc):		Cover Type (gatic/stick up):		(The correction to apply is probe dependent)		<input type="checkbox"/> Other (specify)		Hydrasleeve Type:	
Product Thickness (m):		Bore Locked (YES/NO):		Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve		Sampling Depth (m-pvc):	
		Key Type (if applicable): Hex		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra		Hydrasleeve Install time:	
						<input type="checkbox"/> Other (specify)		Sampling Start Time:	
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):		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
14.07	1	3.32	CIMI	2.68	8.48	7.09	-196	19.2	Black, mod turb, no od.
14.10	1.3	3.30	CIMI	1.84	8.43	7.04	-222	18.7	Dark Brown, low-mod turb, no od.
14.13	1.6	3.28	CIMI	1.12	8.38	7.02	-231	18.5	" " "
14.16	1.9	3.29	CIMI	1.04	8.36	7.01	-235	18.4	" " "
14.19	2.2	3.30	CIMI	0.81	8.33	7.00	-240	18.4	" " "
PARAMETERS STABLE							WELL	SAMPLED	
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: Metals x1	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 250 mL Plastic					
		1 Orange	1 Yellow	1 Purple					
Approval and Distribution									
Fieldwork Staff Signature		Date: 16.5.17		Checker Name and Signature		Date: 17.5.17			
Project Manager Signature		Date: 17.5.17							
Distribution: Project Central File									

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW 44			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date:			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 16/5/17	Bore Radius (mm):	Chem Kit Serial No.:	<input type="checkbox"/> Decontaminated	Sampling Method		Hydrasleeve info.			
Depth to GW (m-pvc): 2.600	Screen Interval (m):	Chem Kit Model:	<input type="checkbox"/> Dedicated	Low Flow Pump rate:		Monitoring sequence followed (number in order):			
Bore Depth (m-pvc): 6.14	Casing Radius (mm):	Corrected Redox: Y / N	<input type="checkbox"/> Disposable	Intake depth:		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"/> Bailer <input type="checkbox"/> Hydrasleeve		Hydrasleeve Size:			
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: <input type="checkbox"/> Downhole		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra		Hydrasleeve Type:			
	Key Type (if applicable):	<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)		Sampling Depth (m-pvc):			
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:				Hydrasleeve Install time:			
						Sampling Start Time:			
						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
11:33	0.00	2.61	CPM1	3.31	1143	7.30	-122	15.80	Slight sulphur smell, low brown turbidity as above
11:36	0.30	2.61	CPM1	2.02	1279	7.23	-161	16.10	
11:39	0.90	2.61	CPM1	1.18	1382	7.17	-184	16.30	''
11:42	1.20	2.61	CPM1	0.86	1435	7.16	-200	16.30	''
11:45	1.50	2.61	CPM1	0.60	1478	7.15	-221	16.30	''
11:48	1.80	2.61	CPM1	0.58	1516	7.15	-233	16.40	''
11:51	2.10	2.61	CPM1	0.56	1546	7.17	-237	16.40	''
11:54	2.40	2.60	CPM1	0.52	1576	7.18	-240	16.40	''
	Parameters			Stabilised	Well	Sampled			
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	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 250 mL Plastic			PID 0.00 ppm		
			1 purple	1 yellow					
				1 orange					
Approval and Distribution									
Fieldwork Staff Signature: <i>Jacob Muller</i>		Date: 16/5/17		Checker Name and Signature: <i>Averyll Coyne</i>		Date: 17.5.17			
Project Manager Signature: <i>Averyll Coyne</i>		Date: 17.5.17		Distribution: Project Central File					

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: GW 39				
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 16/5/17				
Well Development or Well Sampling Event? (circle)										
General Bore Information		Parameter Info.		Decontamination		Sampling Method		Hydrasleeve info.		
Date of GW Level: 1.824 16/5/17	Bore Radius (mm):	Chem Kit Serial No.: 90FLM	<input checked="" type="checkbox"/> Decontaminated	<input checked="" type="checkbox"/> Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):				
Depth to GW (m-pvc): 1.824	Screen Interval (m):	Chem Kit Model: VL	<input type="checkbox"/> Dedicated	Intake depth:	Hydrasleeve Type:					
Bore Depth (m-pvc): 3.48	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	
6:40	0	1.86	CPM1	1.85	2750	6.47	20	14.90	Low turbidity, no odour, Brown	
8:43	0.30	1.86	CPM1	1.44	2750	6.48	14	15.50	as above	
8:46	0.60	1.85	CPM1	0.91	2840	6.51	6	15.90	" "	
8:49	0.90	1.85	CPM1	0.65	2920	6.54	-2	16.20	" "	
8:52	1.20	1.85	CPM1	0.54	2970	6.55	-7	16.40	" "	
8:55	1.50	1.85	CPM1	0.44	3000	6.56	-12	16.80	" "	
8:58	1.86	1.85	CPM1	0.42	3010	6.58	-16	16.80	" "	
9:01	1.86	1.85	CPM1	0.43	3040	6.59	-20	16.90	" "	
Parameters stable				Well sampled						
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	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc. PID 0.60 ppm			
		2 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 250 mL Plastic						
			1 purple	1 yellow						
			1 orange							
Approval and Distribution										
Fieldwork Staff Signature		16/5/17		Checker Name and Signature		17.5.17		Date		
Project Manager Signature		17.5.17		Distribution: Project Central File						

FQM - Groundwater Sampling and Purging Record

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Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: FS - Holden					
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 17/5/17					
General Bore Information				Parameter Info		Decontamination		Sampling Method		Hydrasleeve info	
Date of GW Level:		Bore Radius (mm):		Chem Kit Serial No.: 90FLMVC		<input checked="" type="checkbox"/> Decontaminated		<input checked="" type="checkbox"/> Low Flow Pump rate:		Monitoring sequence followed (number in order):	
Depth to GW (m-pvc): 1.856		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated		Intake depth: 3.5		Hydrasleeve Size:	
Bore Depth (m-pvc): 4.71		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 (gate/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 μ S/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity		
9.07	1	1.85	CM1	0.42	1114	7.13	-68	17.6	light Brown, low foib, no od.		
9.10	1.8	1.85	CM2	0.40	638	6.73	-55	19.4	as above		
9.13	2.2	1.88	CM2	0.37	518	6.59	-43	20.2	as above		
9.16	2.5	1.86	CM1	0.37	485	6.60	-41	20.4	as above		
9.19	2.8	1.85	CM1	0.37	473	6.57	-41	20.2	as above		
9.22	3.1	1.85	CM1	0.39	472	6.55	-37	19.9	as above		
9.25	3.4	1.85	CM1	0.32	468	6.48	-32	19.8	as above		
9.28	3.7	1.85	CM1	0.30	469	6.43	-26	19.8	as above		
9.31	4.0	1.86	CM1	0.34	468	6.37	-25	19.9	as above		
9.34	4.3	1.85	CM1	0.27	468	6.29	-23	20.0	as above		
			PUMP	FAIL	-	cleaned	reset to	3.5 m b to c			
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (using a turbidity meter)		
Analytes Sampled for:		Bottles Collected				QA/QC Information		Field Comments			
Field Filtered: netels	Unfiltered: netels	x 40 mL Vial (HCl)	x 60 mL Ferrous	2 x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.				
		3 x 40 mL Vial (H ₂ SO ₄)	1 x 100 mL Amber	1 x 250 mL Plastic			location outside fencing on road, near disco ave @ straight ~200m from gate 2 Pump fail - sand in piping.				
		1 yellow	1 orange	1 purple							
Approval and Distribution											
Fieldwork Staff Signature		Date: 17.5.17		Checker Name and Signature		Date: 18.5.17					
Project Manager Signature		Date: 18.5.17		Distribution: Project Central File							

ANZ
FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

PAGE 2/2

Project Name: Fishermens Bend		Project Number: 60537182		PM Name: Averyll Coyne		Bore ID: 1-3-Hilden			
Client: EPA		Project Location: Employment Precinct		Fieldwork Staff: Megan Williams / Jacob Muller		Sample Date: 17-5-17			
General Bore Information				Parameter Info.		Discontamination			
Date of GW Level: 17-5-17		Bore Radius (mm):		Chem Kit Serial No.: 70 FCMVC		<input type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 1.85		Screen Interval (m):		Chem Kit Model:		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 4.7		Casing Radius (mm): 50		Corrected Redox: Y / N		<input type="checkbox"/> Disposable			
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 checked="" type="checkbox"/> Downhole		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve			
Calculated bore volume (L):		Key Type (if applicable):		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):		<input type="checkbox"/> Other (specify)			
Well Development or Well Sampling Event? (circle)									
Sampling Method				Hydrasleeve info.					
<input checked="" type="checkbox"/> Low Flow Pump rate: CIM1				Hydrasleeve Size:					
Intake depth: 3.5				Hydrasleeve Type:					
<input type="checkbox"/> Bailer				Sampling Depth (m-pvc):					
<input type="checkbox"/> Hydrasleeve				Hydrasleeve Install time:					
<input type="checkbox"/> Peristaltic Pump				Sampling Start Time:					
<input type="checkbox"/> Waterra				Monitoring sequence followed (number in order):					
<input type="checkbox"/> Other (specify)				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 µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
9.54	5	4.91.87	CIM1	0.65	464	6.25	-7	19.9	clear, no od.
9.57	5.3	1.85	CPM1	0.54	470	6.27	-10	19.9	as above
10.00	5.6	1.85	CIM1	0.32	470	6.32	-22	19.7	as above
10.03	5.9	1.85	CPM1	0.20	469	6.35	-27	19.7	as above
10.06	6.2	1.85	CIM1	0.17	470	6.32	-30	19.7	
PARAMETERS					STABLE	WELL SAMPLED			
Acceptable Parameter Range: ±10% ±3% ±0.05 ±10 mV ±0.2 °C									
Analytes Sampled for:		Bottles Collected				QA/QC Information		Field Comments	
Field Filtered: Metals	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	2 x 60 mL metals (HNO ₃)			± 10% turbidity (if using a turbidity meter)		
		3 x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	1 x 250 mL Plastic			Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
		1 purple	1 yellow	1 orange			- Pump failed after 4.3L removed. air pumping through water line. Pump lifted to 3.5 m bc sand was getting into pump causing leak.		
Approval and Distribution									
Fieldwork Staff Signature: <i>M. Williams</i>		Date: 17-5-17		Checker Name and Signature: <i>Jacob Muller</i>		Date: 18-5-17			
Project Manager Signature: <i>Steve</i>		Date: 18-5-17							
Distribution: Project Central File									



Appendix J

Laboratory Transcripts

Eurofins



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

□ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com
□BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
□GLADSTONE 46 Callenmondah Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

□MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com
□MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
□MUDGEEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

□NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
□NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com
□PERTH 10 Hod Way Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

□SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
□TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4706 0600 E: townsville.environmental@alsglobal.com
□WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS : <input checked="" type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)		
OFFICE: Melbourne		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) <input type="checkbox"/> Non Standard or urgent TAT (List due date):				
PROJECT: Fishermens Bend		ALS QUOTE NO.:		COC SEQUENCE NUMBER (Circle)		
ORDER NUMBER: 60537182				COC: <u>8</u> 2 3 4 5 6 7		
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		OF: <u>8</u> 1 2 3 4 5 6 7		
SAMPLER: NK/MW/JM		SAMPLER MOBILE:		RECEIVED BY: <u>[Signature]</u>		RECEIVED BY:
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME: 11/5/17 6:25		DATE/TIME:
Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com		Email Invoice to: Averyll.Coyne@aceom.com		DATE/TIME: 12/5 12:23		DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to 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 codes below) (refer to)	TOTAL CONTAINERS	pH, TDS, TOC	TRH(C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cs, Mn, K, Cl, HCO3, NO3, NO2, NH4, NH3, PO4, SO4, F and Mn)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	
	QC102	11/05/17	11/5/17	W	Various	10	X	X	X	X	X		X		X	X	
	QC102	11/05/17	11/5/17	W													
TOTAL																	

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 Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

54604

Sample Receipt Advice

Company name: **AECOM Aust Pty Ltd Melbourne**

Contact name: **Averyll Coyne**
Project name: **FISHERMENS BEND**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **May 12, 2017 12:23 PM**
Eurofins | mgt reference: **546047**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 4.5 degrees Celsius.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Onur Mehmet on Phone : (+61) (3) 8564 5026 or by e.mail: OnurMehmet@eurofins.com

Results will be delivered electronically via e.mail to Averyll Coyne - averyll.coyne@aecom.com.

Note: A copy of these results will also be delivered to the general AECOM Aust Pty Ltd Melbourne email address.

Certificate of Analysis

AECOM Aust Pty Ltd Melbourne
Collins Square, Tower 2, Level 11, 727 Collins Street
Docklands
VIC 3008



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Averyll Coyne

Report 546047-W
Project name FISHERMENS BEND
Project ID 60537182 / 3.3
Received Date May 12, 2017

Client Sample ID			QC102_11/05/17
Sample Matrix			Water
Eurofins mgt Sample No.			M17-My13465
Date Sampled			May 11, 2017
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1
Volatile Organics			
1.1-Dichloroethane	0.001	mg/L	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001
2-Butanone (MEK)	0.001	mg/L	< 0.001
2-Propanone (Acetone)	0.001	mg/L	< 0.01
4-Chlorotoluene	0.001	mg/L	< 0.001
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001
Allyl chloride	0.001	mg/L	< 0.001
Benzene	0.001	mg/L	< 0.001
Bromobenzene	0.001	mg/L	< 0.001
Bromochloromethane	0.001	mg/L	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001
Bromoform	0.001	mg/L	< 0.001
Bromomethane	0.001	mg/L	< 0.001
Carbon disulfide	0.001	mg/L	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001

Client Sample ID			QC102_11/05/17
Sample Matrix			Water
Eurofins mgt Sample No.			M17-My13465
Date Sampled			May 11, 2017
Test/Reference	LOR	Unit	
Volatile Organics			
Chlorobenzene	0.001	mg/L	< 0.001
Chloroethane	0.001	mg/L	< 0.001
Chloroform	0.005	mg/L	< 0.005
Chloromethane	0.001	mg/L	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001
Dibromomethane	0.001	mg/L	< 0.001
Dichlorodifluoromethane	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
Iodomethane	0.001	mg/L	< 0.001
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
Methylene Chloride	0.001	mg/L	< 0.001
o-Xylene	0.001	mg/L	< 0.001
Styrene	0.001	mg/L	0.002
Tetrachloroethene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001
Trichloroethene	0.001	mg/L	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
Fluorobenzene (surr.)	1	%	73
4-Bromofluorobenzene (surr.)	1	%	70
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.01	mg/L	< 0.01
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	< 0.001
Benzo(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	< 0.001
Fluorene	0.001	mg/L	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001
Naphthalene	0.001	mg/L	< 0.001
Phenanthrene	0.001	mg/L	< 0.001
Pyrene	0.001	mg/L	< 0.001
Total PAH*	0.001	mg/L	< 0.001

Client Sample ID			QC102_11/05/17
Sample Matrix			Water
Eurofins mgt Sample No.			M17-My13465
Date Sampled			May 11, 2017
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
2-Fluorobiphenyl (surr.)	1	%	91
p-Terphenyl-d14 (surr.)	1	%	106
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
Ammonia (as N)			
Ammonia (as N)	0.01	mg/L	0.66
Ammonium Ion (as N)			
Ammonium Ion (as N)	0.01	mg/L	0.70
Chloride			
Chloride	1	mg/L	100
Fluoride			
Fluoride	0.5	mg/L	< 0.5
Nitrate & Nitrite (as N)			
Nitrate & Nitrite (as N)	0.05	mg/L	0.38
Nitrate (as N)			
Nitrate (as N)	0.02	mg/L	0.35
Nitrite (as N)			
Nitrite (as N)	0.02	mg/L	0.03
Organic Nitrogen (as N)			
Organic Nitrogen (as N)	0.2	mg/L	1.3
pH			
pH	0.1	pH Units	7.5
Phosphate total (as P)			
Phosphate total (as P)	0.05	mg/L	0.21
Sulphate (as S)			
Sulphate (as S)	5	mg/L	120
Sulphate (as SO4)			
Sulphate (as SO4)	5	mg/L	370
Sulphide (as S)			
Sulphide (as S)	0.05	mg/L	< 0.05
Sulphite (as S)			
Sulphite (as S)	0.5	mg/L	^{G01} < 2.5
Thiosulphate (as S)			
Thiosulphate (as S)	1	mg/L	^{G01} < 5
Total Dissolved Solids			
Total Dissolved Solids	10	mg/L	1100
Total Kjeldahl Nitrogen (as N)			
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.0
Total Nitrogen (as N)			
Total Nitrogen (as N)	0.2	mg/L	2.4
Total Organic Carbon			
Total Organic Carbon	5	mg/L	34
Total Sulphur (as S)			
Total Sulphur (as S)	5	mg/L	120
Alkalinity (speciated)			
Bicarbonate Alkalinity (as CaCO3)			
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	290
Heavy Metals			
Aluminium			
Aluminium	0.05	mg/L	17
Aluminium (filtered)			
Aluminium (filtered)	0.05	mg/L	0.12
Arsenic			
Arsenic	0.001	mg/L	0.024
Arsenic (filtered)			
Arsenic (filtered)	0.001	mg/L	0.006
Cadmium			
Cadmium	0.0002	mg/L	< 0.0002
Cadmium (filtered)			
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium			
Chromium	0.001	mg/L	0.056
Chromium (filtered)			
Chromium (filtered)	0.001	mg/L	0.003
Copper			
Copper	0.001	mg/L	0.011
Copper (filtered)			
Copper (filtered)	0.001	mg/L	< 0.001
Iron			
Iron	0.05	mg/L	27
Iron (filtered)			
Iron (filtered)	0.05	mg/L	3.7
Lead			
Lead	0.001	mg/L	0.015
Lead (filtered)			
Lead (filtered)	0.001	mg/L	< 0.001
Manganese			
Manganese	0.005	mg/L	0.096
Manganese (filtered)			
Manganese (filtered)	0.005	mg/L	0.058
Mercury			
Mercury	0.0001	mg/L	< 0.0001
Mercury (filtered)			
Mercury (filtered)	0.0001	mg/L	< 0.0001

Client Sample ID			QC102_11/05/17
Sample Matrix			Water
Eurofins mgt Sample No.			M17-My13465
Date Sampled			May 11, 2017
Test/Reference	LOR	Unit	
Heavy Metals			
Nickel	0.001	mg/L	0.061
Nickel (filtered)	0.001	mg/L	0.032
Selenium	0.001	mg/L	0.003
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	0.052
Zinc (filtered)	0.005	mg/L	0.010
Alkali Metals			
Calcium	0.5	mg/L	80
Magnesium	0.5	mg/L	40
Potassium	0.5	mg/L	7.8
Sodium	0.5	mg/L	150

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	May 17, 2017	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 15, 2017	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 17, 2017	7 Day
Volatile Organics - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices	Melbourne	May 15, 2017	7 Days
Polycyclic Aromatic Hydrocarbons - Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons	Melbourne	May 17, 2017	7 Day
Ammonium Ion (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	May 15, 2017	7 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	May 15, 2017	28 Day
Fluoride - Method: LM-LTM-INO-4300 (Fluoride by Ion Chromatography)	Melbourne	May 16, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	May 15, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	May 15, 2017	28 Day
Sulphate (as SO4) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	May 15, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	May 15, 2017	7 Day
Total Organic Carbon - Method: APHA 5310B Total Organic Carbon	Melbourne	May 16, 2017	28 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	May 15, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	May 16, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	May 16, 2017	180 Day
Mercury (filtered) - Method: USEPA 7470/1 Mercury	Melbourne	May 16, 2017	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	May 15, 2017	180 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	May 15, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	May 15, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	May 15, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	May 15, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	May 13, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	May 15, 2017	7 Day
Total Sulphur Set (as S)			

Description	Testing Site	Extracted	Holding Time
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	May 15, 2017	28 Day
Sulphide (as S) - Method: APHA 4500-S C & D - Sulphide	Melbourne	May 16, 2017	7 Day
Sulphite (as S) - Method: LTM-INO-4240 Sulfite & Thiosulfate in Water	Melbourne	May 15, 2017	2 Day
Thiosulphate (as S) - Method: LTM-INO-4240 Sulfite & Thiosulfate in Water	Melbourne	May 15, 2017	2 Day
Total Sulphur (as S) - Method: Sum of Constituent Analytes	Melbourne	May 15, 2017	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.1-Dichloroethene	mg/L	< 0.001			0.001	Pass	
1.1.1-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.1.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dibromoethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.2-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.3-Trichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.4-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.3.5-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.4-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
2-Butanone (MEK)	mg/L	< 0.001			0.001	Pass	
2-Propanone (Acetone)	mg/L	< 0.001			0.001	Pass	
4-Chlorotoluene	mg/L	< 0.001			0.001	Pass	
4-Methyl-2-pentanone (MIBK)	mg/L	< 0.001			0.001	Pass	
Allyl chloride	mg/L	< 0.001			0.001	Pass	
Benzene	mg/L	< 0.001			0.001	Pass	
Bromobenzene	mg/L	< 0.001			0.001	Pass	
Bromochloromethane	mg/L	< 0.001			0.001	Pass	
Bromodichloromethane	mg/L	< 0.001			0.001	Pass	
Bromoform	mg/L	< 0.001			0.001	Pass	
Bromomethane	mg/L	< 0.001			0.001	Pass	
Carbon disulfide	mg/L	< 0.001			0.001	Pass	
Carbon Tetrachloride	mg/L	< 0.001			0.001	Pass	
Chlorobenzene	mg/L	< 0.001			0.001	Pass	
Chloroethane	mg/L	< 0.001			0.001	Pass	
Chloroform	mg/L	< 0.005			0.005	Pass	
Chloromethane	mg/L	< 0.001			0.001	Pass	
cis-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
cis-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Dibromochloromethane	mg/L	< 0.001			0.001	Pass	
Dibromomethane	mg/L	< 0.001			0.001	Pass	
Dichlorodifluoromethane	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
Iodomethane	mg/L	< 0.001			0.001	Pass	
Isopropyl benzene (Cumene)	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
Methylene Chloride	mg/L	< 0.001			0.001	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Styrene	mg/L	< 0.001			0.001	Pass	
Tetrachloroethene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
trans-1,2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
trans-1,3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Trichloroethene	mg/L	< 0.001			0.001	Pass	
Trichlorofluoromethane	mg/L	< 0.001			0.001	Pass	
Vinyl chloride	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Ammonium Ion (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Fluoride	mg/L	< 0.5			0.5	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Sulphate (as SO4)	mg/L	< 5			5	Pass	
Sulphide (as S)	mg/L	< 0.05			0.05	Pass	
Sulphite (as S)	mg/L	< 0.5			0.5	Pass	
Thiosulphate (as S)	mg/L	< 1			1	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Organic Carbon	mg/L	< 5			5	Pass	
Method Blank							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	94			70-130	Pass	
TRH C10-C14	%	73			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	96			70-130	Pass	
1.1.1-Trichloroethane	%	121			70-130	Pass	
1.2-Dichlorobenzene	%	102			70-130	Pass	
1.2-Dichloroethane	%	102			70-130	Pass	
Benzene	%	101			70-130	Pass	
Ethylbenzene	%	104			70-130	Pass	
m&p-Xylenes	%	107			70-130	Pass	
Toluene	%	77			70-130	Pass	
Trichloroethene	%	76			70-130	Pass	
Xylenes - Total	%	107			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	80			70-130	Pass	
TRH C6-C10	%	92			70-130	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery						
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	%	108		70-130	Pass	
Acenaphthylene	%	121		70-130	Pass	
Anthracene	%	101		70-130	Pass	
Benz(a)anthracene	%	102		70-130	Pass	
Benzo(a)pyrene	%	107		70-130	Pass	
Benzo(b&j)fluoranthene	%	104		70-130	Pass	
Benzo(g,h,i)perylene	%	126		70-130	Pass	
Benzo(k)fluoranthene	%	114		70-130	Pass	
Chrysene	%	117		70-130	Pass	
Dibenz(a,h)anthracene	%	126		70-130	Pass	
Fluoranthene	%	121		70-130	Pass	
Fluorene	%	109		70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	127		70-130	Pass	
Naphthalene	%	100		70-130	Pass	
Phenanthrene	%	106		70-130	Pass	
Pyrene	%	117		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	%	81		70-130	Pass	
LCS - % Recovery						
Ammonia (as N)	%	88		70-130	Pass	
Chloride	%	107		70-130	Pass	
Fluoride	%	107		70-130	Pass	
Nitrate & Nitrite (as N)	%	90		70-130	Pass	
Nitrate (as N)	%	90		70-130	Pass	
Nitrite (as N)	%	102		70-130	Pass	
Phosphate total (as P)	%	88		70-130	Pass	
Sulphate (as S)	%	100		70-130	Pass	
Sulphate (as SO4)	%	100		70-130	Pass	
Sulphide (as S)	%	100		70-130	Pass	
Thiosulphate (as S)	%	100		70-130	Pass	
Total Dissolved Solids	%	93		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	102		70-130	Pass	
Total Organic Carbon	%	95		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium (filtered)	%	87		80-120	Pass	
Arsenic	%	92		80-120	Pass	
Arsenic (filtered)	%	92		80-120	Pass	
Cadmium	%	92		80-120	Pass	
Cadmium (filtered)	%	92		80-120	Pass	
Chromium	%	93		80-120	Pass	
Chromium (filtered)	%	93		80-120	Pass	
Copper	%	91		80-120	Pass	
Copper (filtered)	%	91		80-120	Pass	
Iron	%	92		80-120	Pass	
Iron (filtered)	%	91		80-120	Pass	
Lead	%	90		80-120	Pass	
Lead (filtered)	%	90		80-120	Pass	
Manganese	%	93		80-120	Pass	
Manganese (filtered)	%	93		80-120	Pass	
Mercury	%	89		75-125	Pass	

Test		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mercury (filtered)		%	89			70-130	Pass	
Nickel		%	92			80-120	Pass	
Nickel (filtered)		%	92			80-120	Pass	
Selenium		%	92			80-120	Pass	
Selenium (filtered)		%	92			80-120	Pass	
Zinc		%	92			80-120	Pass	
Zinc (filtered)		%	92			80-120	Pass	
LCS - % Recovery								
Alkali Metals								
Calcium		%	83			70-130	Pass	
Magnesium		%	91			70-130	Pass	
Potassium		%	83			70-130	Pass	
Sodium		%	83			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C10-C14	M17-My13882	NCP	%	83		70-130	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons				Result 1				
Acenaphthene	M17-My11574	NCP	%	114		70-130	Pass	
Acenaphthylene	M17-My11574	NCP	%	126		70-130	Pass	
Anthracene	M17-My11574	NCP	%	107		70-130	Pass	
Benz(a)anthracene	M17-My11574	NCP	%	106		70-130	Pass	
Benzo(a)pyrene	M17-My11574	NCP	%	116		70-130	Pass	
Benzo(b&i)fluoranthene	M17-My11574	NCP	%	119		70-130	Pass	
Benzo(g,h,i)perylene	M17-My11574	NCP	%	112		70-130	Pass	
Benzo(k)fluoranthene	M17-My11574	NCP	%	125		70-130	Pass	
Chrysene	M17-My11574	NCP	%	112		70-130	Pass	
Dibenz(a,h)anthracene	M17-My11574	NCP	%	111		70-130	Pass	
Fluoranthene	M17-My11574	NCP	%	125		70-130	Pass	
Fluorene	M17-My11574	NCP	%	113		70-130	Pass	
Indeno(1,2,3-cd)pyrene	M17-My11574	NCP	%	111		70-130	Pass	
Naphthalene	M17-My11574	NCP	%	102		70-130	Pass	
Phenanthrene	M17-My11574	NCP	%	107		70-130	Pass	
Pyrene	M17-My11574	NCP	%	126		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M17-My13882	NCP	%	91		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-My13465	CP	%	85		70-130	Pass	
Chloride	M17-My13319	NCP	%	100		70-130	Pass	
Fluoride	M17-My13330	NCP	%	99		70-130	Pass	
Nitrate & Nitrite (as N)	M17-My13465	CP	%	89		70-130	Pass	
Nitrate (as N)	M17-My13465	CP	%	89		70-130	Pass	
Nitrite (as N)	M17-My13465	CP	%	102		70-130	Pass	
Sulphate (as S)	M17-My13319	NCP	%	87		70-130	Pass	
Sulphate (as SO4)	M17-My13319	NCP	%	87		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M17-My11322	NCP	%	108		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium (filtered)	M17-My13359	NCP	%	91		75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Arsenic	M17-My12493	NCP	%	100			75-125	Pass	
Arsenic (filtered)	M17-My13359	NCP	%	103			70-130	Pass	
Cadmium	M17-My12493	NCP	%	91			75-125	Pass	
Cadmium (filtered)	M17-My13359	NCP	%	84			70-130	Pass	
Chromium	M17-My12493	NCP	%	96			75-125	Pass	
Chromium (filtered)	M17-My13359	NCP	%	92			70-130	Pass	
Copper	M17-My12493	NCP	%	90			75-125	Pass	
Copper (filtered)	M17-My13359	NCP	%	86			70-130	Pass	
Iron (filtered)	M17-My13359	NCP	%	94			70-130	Pass	
Lead	M17-My12493	NCP	%	90			75-125	Pass	
Lead (filtered)	M17-My13359	NCP	%	84			70-130	Pass	
Manganese	M17-My12493	NCP	%	95			75-125	Pass	
Manganese (filtered)	M17-My13359	NCP	%	89			70-130	Pass	
Mercury	M17-My12493	NCP	%	99			70-130	Pass	
Mercury (filtered)	M17-My13359	NCP	%	69			70-130	Fail	Q08
Nickel	M17-My12493	NCP	%	91			75-125	Pass	
Nickel (filtered)	M17-My13359	NCP	%	88			70-130	Pass	
Selenium	M17-My12493	NCP	%	96			75-125	Pass	
Selenium (filtered)	M17-My13359	NCP	%	97			70-130	Pass	
Zinc	M17-My12493	NCP	%	91			75-125	Pass	
Zinc (filtered)	M17-My13359	NCP	%	90			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-My13465	CP	%	120			70-130	Pass	
Magnesium	M17-My13465	CP	%	116			70-130	Pass	
Potassium	M17-My13465	CP	%	106			70-130	Pass	
Sodium	M17-My13465	CP	%	119			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M17-My12849	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M17-My13881	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M17-My13881	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M17-My13881	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1-Dichloroethene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.1-Trichloroethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.2-Trichloroethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dibromoethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichlorobenzene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichloroethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichloropropane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2.3-Trichloropropane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2.4-Trimethylbenzene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.3-Dichlorobenzene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.3-Dichloropropane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.3.5-Trimethylbenzene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.4-Dichlorobenzene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
2-Butanone (MEK)	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
2-Propanone (Acetone)	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
4-Chlorotoluene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
4-Methyl-2-pentanone (MIBK)	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Allyl chloride	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromobenzene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromochloromethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromodichloromethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromoform	M17-My12849	NCP	mg/L	0.002	0.002	13	30%	Pass
Bromomethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Carbon disulfide	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Carbon Tetrachloride	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chlorobenzene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chloroethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chloroform	M17-My12849	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Chloromethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
cis-1,2-Dichloroethene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
cis-1,3-Dichloropropene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibromochloromethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibromomethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dichlorodifluoromethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iodomethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Isopropyl benzene (Cumene)	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	M17-My12849	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Methylene Chloride	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
o-Xylene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Styrene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Tetrachloroethene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
trans-1,2-Dichloroethene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
trans-1,3-Dichloropropene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Trichloroethene	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Trichlorofluoromethane	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Vinyl chloride	M17-My12849	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	M17-My12849	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M17-My12849	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	M17-My12849	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Acenaphthylene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Anthracene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benz(a)anthracene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(a)pyrene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(b&j)fluoranthene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(g,h,i)perylene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(k)fluoranthene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chrysene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibenz(a,h)anthracene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluoranthene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluorene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Naphthalene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Phenanthrene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Pyrene	M17-My11735	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M17-My13881	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M17-My13881	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M17-My13881	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M17-My13465	CP	mg/L	0.66	0.66	<1	30%	Pass
Ammonium Ion (as N)	M17-My13465	CP	mg/L	0.70	0.70	<1	30%	Pass
Chloride	M17-My13378	NCP	mg/L	4300	4200	1.5	30%	Pass
Fluoride	M17-My13329	NCP	mg/L	< 0.5	0.5	3.0	30%	Pass
Nitrate & Nitrite (as N)	M17-My13465	CP	mg/L	0.38	0.38	1.0	30%	Pass
Nitrate (as N)	M17-My13465	CP	mg/L	0.35	0.35	<1	30%	Pass
Nitrite (as N)	M17-My13465	CP	mg/L	0.03	0.02	10	30%	Pass
pH	M17-My13329	NCP	pH Units	8.2	8.2	pass	30%	Pass
Phosphate total (as P)	M17-My13316	NCP	mg/L	0.57	0.68	18	30%	Pass
Sulphate (as S)	M17-My13330	NCP	mg/L	47	48	1.9	30%	Pass
Sulphate (as SO4)	M17-My13330	NCP	mg/L	140	140	1.9	30%	Pass
Sulphide (as S)	B17-My09985	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphite (as S)	M17-My17866	NCP	mg/L	< 5	< 5	<1	30%	Pass
Thiosulphate (as S)	M17-My17866	NCP	mg/L	12	9.8	17	30%	Pass
Total Dissolved Solids	M17-My12157	NCP	mg/L	640	650	2.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	M17-My13316	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Total Organic Carbon	M17-My13321	NCP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M17-My13329	NCP	mg/L	330	340	3.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M17-My13359	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic	M17-My12493	NCP	mg/L	0.003	0.003	2.0	30%	Pass
Arsenic (filtered)	M17-My13359	NCP	mg/L	0.002	0.002	2.0	30%	Pass
Cadmium	M17-My12493	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Cadmium (filtered)	M17-My13359	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	M17-My12493	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M17-My13359	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M17-My12493	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M17-My13359	NCP	mg/L	0.004	0.004	1.0	30%	Pass
Iron (filtered)	M17-My13359	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead	M17-My12493	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M17-My13359	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M17-My12493	NCP	mg/L	0.023	0.023	2.0	30%	Pass
Manganese (filtered)	M17-My13359	NCP	mg/L	0.089	0.087	2.0	30%	Pass
Mercury	M17-My12493	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M17-My13359	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M17-My12493	NCP	mg/L	0.002	0.002	9.0	30%	Pass
Nickel (filtered)	M17-My13359	NCP	mg/L	0.003	0.003	9.0	30%	Pass
Selenium	M17-My12493	NCP	mg/L	0.006	0.006	3.0	30%	Pass
Selenium (filtered)	M17-My13359	NCP	mg/L	0.023	0.022	2.0	30%	Pass
Zinc	M17-My12493	NCP	mg/L	0.010	0.010	1.0	30%	Pass
Zinc (filtered)	M17-My13359	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-My13465	CP	mg/L	80	81	2.0	30%	Pass
Magnesium	M17-My13465	CP	mg/L	40	41	2.0	30%	Pass
Potassium	M17-My13465	CP	mg/L	7.8	7.2	9.0	30%	Pass
Sodium	M17-My13465	CP	mg/L	150	150	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

Onur Mehmet	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **AECOM Aust Pty Ltd Melbourne**

Contact name: Averyll Coyne
Project ID: 60537182 / 3.4
COC number: Not provided
Turn around time: 5 Day
Date/Time received: May 15, 2017 12:03 PM
Eurofins | mgt reference: **546117**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 3.6 degrees Celsius.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Onur Mehmet on Phone : (+61) (3) 8564 5026 or by e.mail: OnurMehmet@eurofins.com

Results will be delivered electronically via e.mail to Averyll Coyne - averyll.coyne@aecom.com.

Note: A copy of these results will also be delivered to the general AECOM Aust Pty Ltd Melbourne email address.

Certificate of Analysis

AECOM Aust Pty Ltd Melbourne
Collins Square, Tower 2, Level 11, 727 Collins Street
Docklands
VIC 3008



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Averyll Coyne**

Report **546117-W**

Project name

Project ID 60537182 / 3.4

Received Date May 15, 2017

Client Sample ID			QC107_120517
Sample Matrix			Water
Eurofins mgt Sample No.			M17-My13918
Date Sampled			May 12, 2017
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1
Volatile Organics			
1.1-Dichloroethane	0.001	mg/L	0.002
1.1-Dichloroethene	0.001	mg/L	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001
2-Butanone (MEK)	0.001	mg/L	< 0.001
2-Propanone (Acetone)	0.001	mg/L	< 0.001
4-Chlorotoluene	0.001	mg/L	< 0.001
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001
Allyl chloride	0.001	mg/L	< 0.001
Benzene	0.001	mg/L	0.006
Bromobenzene	0.001	mg/L	< 0.001
Bromochloromethane	0.001	mg/L	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001
Bromoform	0.001	mg/L	< 0.001
Bromomethane	0.001	mg/L	< 0.001
Carbon disulfide	0.001	mg/L	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001

Client Sample ID			QC107_120517
Sample Matrix			Water
Eurofins mgt Sample No.			M17-My13918
Date Sampled			May 12, 2017
Test/Reference	LOR	Unit	
Volatile Organics			
Chlorobenzene	0.001	mg/L	< 0.001
Chloroethane	0.001	mg/L	< 0.001
Chloroform	0.005	mg/L	< 0.005
Chloromethane	0.001	mg/L	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	0.013
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001
Dibromomethane	0.001	mg/L	< 0.001
Dichlorodifluoromethane	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
Iodomethane	0.001	mg/L	< 0.001
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
Methylene Chloride	0.001	mg/L	< 0.001
o-Xylene	0.001	mg/L	< 0.001
Styrene	0.001	mg/L	< 0.001
Tetrachloroethene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001
Trichloroethene	0.001	mg/L	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
Fluorobenzene (surr.)	1	%	71
4-Bromofluorobenzene (surr.)	1	%	68
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.01	mg/L	< 0.01
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	< 0.001
Fluorene	0.001	mg/L	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001
Naphthalene	0.001	mg/L	< 0.001
Phenanthrene	0.001	mg/L	< 0.001
Pyrene	0.001	mg/L	< 0.001
Total PAH*	0.001	mg/L	< 0.001

Client Sample ID			QC107_120517
Sample Matrix			Water
Eurofins mgt Sample No.			M17-My13918
Date Sampled			May 12, 2017
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
2-Fluorobiphenyl (surr.)	1	%	79
p-Terphenyl-d14 (surr.)	1	%	137
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
Ammonia (as N)			
Ammonia (as N)	0.01	mg/L	0.70
Ammonium Ion (as N)			
Ammonium Ion (as N)	0.01	mg/L	0.74
Chloride			
Chloride	1	mg/L	240
Fluoride			
Fluoride	0.5	mg/L	< 0.5
Nitrate & Nitrite (as N)			
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05
Nitrate (as N)			
Nitrate (as N)	0.02	mg/L	< 0.02
Nitrite (as N)			
Nitrite (as N)	0.02	mg/L	< 0.02
pH			
pH	0.1	pH Units	7.1
Phosphate total (as P)			
Phosphate total (as P)	0.05	mg/L	0.15
Sulphate (as S)			
Sulphate (as S)	5	mg/L	58
Sulphate (as SO4)			
Sulphate (as SO4)	5	mg/L	170
Sulphide (as S)			
Sulphide (as S)	0.05	mg/L	< 0.05
Sulphite (as S)			
Sulphite (as S)	0.5	mg/L	^{G01} < 2.5
Thiosulphate (as S)			
Thiosulphate (as S)	1	mg/L	^{G01} < 5
Total Dissolved Solids			
Total Dissolved Solids	10	mg/L	1100
Total Kjeldahl Nitrogen (as N)			
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.9
Total Nitrogen (as N)			
Total Nitrogen (as N)	0.2	mg/L	1.9
Total Organic Carbon			
Total Organic Carbon	5	mg/L	44
Total Sulphur (as S)			
Total Sulphur (as S)	5	mg/L	58
Alkalinity (speciated)			
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	480
Heavy Metals			
Aluminium			
Aluminium	0.05	mg/L	3.6
Aluminium (filtered)			
Aluminium (filtered)	0.05	mg/L	0.25
Arsenic			
Arsenic	0.001	mg/L	0.015
Arsenic (filtered)			
Arsenic (filtered)	0.001	mg/L	0.008
Cadmium			
Cadmium	0.0002	mg/L	< 0.0002
Cadmium (filtered)			
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium			
Chromium	0.001	mg/L	0.022
Chromium (filtered)			
Chromium (filtered)	0.001	mg/L	0.008
Copper			
Copper	0.001	mg/L	0.004
Copper (filtered)			
Copper (filtered)	0.001	mg/L	< 0.001
Iron			
Iron	0.05	mg/L	4.9
Iron (filtered)			
Iron (filtered)	0.05	mg/L	1.1
Lead			
Lead	0.001	mg/L	0.004
Lead (filtered)			
Lead (filtered)	0.001	mg/L	< 0.001
Manganese			
Manganese	0.005	mg/L	0.040
Mercury			
Mercury	0.0001	mg/L	< 0.0001
Mercury (filtered)			
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel			
Nickel	0.001	mg/L	0.016
Nickel (filtered)			
Nickel (filtered)	0.001	mg/L	0.011
Selenium			
Selenium	0.001	mg/L	0.001

Client Sample ID			QC107_120517
Sample Matrix			Water
Eurofins mgt Sample No.			M17-My13918
Date Sampled			May 12, 2017
Test/Reference	LOR	Unit	
Heavy Metals			
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	0.037
Zinc (filtered)	0.005	mg/L	0.012
Alkali Metals			
Calcium	0.5	mg/L	69
Magnesium	0.5	mg/L	34
Potassium	0.5	mg/L	7.9

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	May 17, 2017	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 16, 2017	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 17, 2017	7 Day
Volatile Organics - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices	Melbourne	May 16, 2017	7 Days
Polycyclic Aromatic Hydrocarbons - Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons	Melbourne	May 17, 2017	7 Day
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	May 16, 2017	28 Day
Ammonium Ion (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	May 16, 2017	7 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	May 16, 2017	28 Day
Fluoride - Method: LM-LTM-INO-4300 (Fluoride by Ion Chromatography)	Melbourne	May 16, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	May 16, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	May 16, 2017	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	May 16, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	May 16, 2017	28 Day
Sulphate (as SO4) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	May 16, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	May 16, 2017	7 Day
Total Organic Carbon - Method: APHA 5310B Total Organic Carbon	Melbourne	May 16, 2017	28 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	May 16, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	May 17, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	May 17, 2017	180 Day
Mercury (filtered) - Method: USEPA 7470/1 Mercury	Melbourne	May 17, 2017	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	May 16, 2017	180 Day
Total Nitrogen Set (as N) Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	May 16, 2017	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	May 16, 2017	7 Day
Total Sulphur Set (as S) Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	May 16, 2017	28 Day

Description	Testing Site	Extracted	Holding Time
Sulphide (as S) - Method: APHA 4500-S C & D - Sulphide	Melbourne	May 16, 2017	7 Day
Sulphite (as S) - Method: LTM-INO-4240 Sulfite & Thiosulfate in Water	Melbourne	May 16, 2017	2 Day
Thiosulphate (as S) - Method: LTM-INO-4240 Sulfite & Thiosulfate in Water	Melbourne	May 16, 2017	2 Day
Total Sulphur (as S) - Method: Sum of Constituent Analytes	Melbourne	May 16, 2017	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Method Blank									
Chloride		mg/L	< 1			1	Pass		
Fluoride		mg/L	< 0.5			0.5	Pass		
Nitrate (as N)		mg/L	< 0.02			0.02	Pass		
Sulphate (as S)		mg/L	< 5			5	Pass		
Sulphate (as SO ₄)		mg/L	< 5			5	Pass		
Total Organic Carbon		mg/L	< 5			5	Pass		
Method Blank									
Heavy Metals									
Aluminium		mg/L	< 0.05			0.05	Pass		
Arsenic		mg/L	< 0.001			0.001	Pass		
Cadmium		mg/L	< 0.0002			0.0002	Pass		
Chromium		mg/L	< 0.001			0.001	Pass		
Copper		mg/L	< 0.001			0.001	Pass		
Iron		mg/L	< 0.05			0.05	Pass		
Lead		mg/L	< 0.001			0.001	Pass		
Manganese		mg/L	< 0.005			0.005	Pass		
Mercury		mg/L	< 0.0001			0.0001	Pass		
Nickel		mg/L	< 0.001			0.001	Pass		
Selenium		mg/L	< 0.001			0.001	Pass		
Zinc		mg/L	< 0.005			0.005	Pass		
LCS - % Recovery									
Heavy Metals									
Aluminium		%	88			80-120	Pass		
Arsenic		%	95			80-120	Pass		
Cadmium		%	95			80-120	Pass		
Chromium		%	93			80-120	Pass		
Copper		%	85			80-120	Pass		
Iron		%	92			80-120	Pass		
Lead		%	92			80-120	Pass		
Manganese		%	95			80-120	Pass		
Mercury		%	90			75-125	Pass		
Nickel		%	91			80-120	Pass		
Selenium		%	95			80-120	Pass		
Zinc		%	100			80-120	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M17-My17234	NCP	mg/L	0.22	0.28	23	30%	Pass	
TRH C10-C14	M17-My13783	NCP	mg/L	3.0	3.1	2.0	30%	Pass	
TRH C15-C28	M17-My13783	NCP	mg/L	5.4	5.9	7.0	30%	Pass	
TRH C29-C36	M17-My13783	NCP	mg/L	0.8	1.0	13	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1-Dichloroethene	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.1-Trichloroethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.2-Trichloroethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dibromoethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
1.2-Dichloroethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1.2-Dichloropropane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1.2.3-Trichloropropane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1.3-Dichloropropane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
2-Butanone (MEK)	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
2-Propanone (Acetone)	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
4-Methyl-2-pentanone (MIBK)	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Allyl chloride	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromochloromethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromodichloromethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromoform	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromomethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Carbon disulfide	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Carbon Tetrachloride	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chlorobenzene	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chloroethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chloromethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
cis-1.2-Dichloroethene	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
cis-1.3-Dichloropropene	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibromochloromethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibromomethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dichlorodifluoromethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	M17-My17234	NCP	mg/L	0.016	0.018	13	30%	Pass
Iodomethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Isopropyl benzene (Cumene)	M17-My17234	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Styrene	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	M17-My17234	NCP	mg/L	0.034	0.036	5.0	30%	Pass
trans-1.2-Dichloroethene	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
trans-1.3-Dichloropropene	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Trichlorofluoromethane	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Vinyl chloride	M17-My17234	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	M17-My17234	NCP	mg/L	0.073	0.087	17	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Acenaphthylene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Anthracene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benz(a)anthracene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(a)pyrene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(b&j)fluoranthene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(g,h,i)perylene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(k)fluoranthene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chrysene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibenz(a,h)anthracene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluoranthene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluorene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Indeno(1.2.3-cd)pyrene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Naphthalene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Phenanthrene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Pyrene	M17-My13806	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M17-My13783	NCP	mg/L	1.3	1.5	10	30%	Pass
TRH >C16-C34	M17-My13783	NCP	mg/L	6.2	6.8	8.0	30%	Pass
TRH >C34-C40	M17-My13783	NCP	mg/L	0.3	0.3	14	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M17-My13886	NCP	mg/L	0.13	0.12	6.0	30%	Pass
Ammonium Ion (as N)	M17-My13886	NCP	mg/L	0.14	0.13	6.0	30%	Pass
Chloride	M17-My14650	NCP	mg/L	170	170	<1	30%	Pass
Fluoride	M17-My13329	NCP	mg/L	< 0.5	0.5	3.0	30%	Pass
Nitrate & Nitrite (as N)	M17-My13886	NCP	mg/L	4.2	4.2	<1	30%	Pass
Nitrate (as N)	M17-My13886	NCP	mg/L	4.0	4.0	<1	30%	Pass
Nitrite (as N)	M17-My13886	NCP	mg/L	0.18	0.18	1.0	30%	Pass
pH	B17-My13919	NCP	pH Units	8.0	8.0	pass	30%	Pass
Phosphate total (as P)	M17-My14014	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M17-My14650	NCP	mg/L	78	76	1.9	30%	Pass
Sulphate (as SO4)	M17-My14650	NCP	mg/L	230	230	1.9	30%	Pass
Sulphide (as S)	M17-My13786	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphite (as S)	S17-My17948	NCP	mg/L	< 2.5	< 2.5	<1	30%	Pass
Thiosulphate (as S)	S17-My17948	NCP	mg/L	< 5	< 5	<1	30%	Pass
Total Dissolved Solids	M17-My13785	NCP	mg/L	190	210	9.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	M17-My14014	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Total Organic Carbon	S17-My12703	NCP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M17-My13776	NCP	mg/L	0.40	0.37	8.0	30%	Pass
Aluminium (filtered)	M17-My13776	NCP	mg/L	0.10	0.09	6.0	30%	Pass
Arsenic	M17-My13776	NCP	mg/L	0.002	0.002	4.0	30%	Pass
Arsenic (filtered)	M17-My13776	NCP	mg/L	0.001	0.001	1.0	30%	Pass
Cadmium	M17-My13776	NCP	mg/L	0.0011	0.0009	23	30%	Pass
Cadmium (filtered)	M17-My13776	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	M17-My13776	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M17-My13776	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M17-My13776	NCP	mg/L	0.008	0.007	21	30%	Pass
Copper (filtered)	M17-My13776	NCP	mg/L	0.002	0.002	10	30%	Pass
Iron	B17-My14849	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Iron (filtered)	M17-My13776	NCP	mg/L	0.67	0.63	6.0	30%	Pass
Lead	M17-My13776	NCP	mg/L	0.002	0.001	16	30%	Pass
Lead (filtered)	M17-My13776	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M17-My13776	NCP	mg/L	0.20	0.17	16	30%	Pass
Mercury	M17-My13776	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M17-My13776	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M17-My13776	NCP	mg/L	0.007	0.006	21	30%	Pass
Nickel (filtered)	M17-My13776	NCP	mg/L	0.003	0.003	2.0	30%	Pass
Selenium	M17-My13776	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M17-My13776	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M17-My13776	NCP	mg/L	0.064	0.052	20	30%	Pass
Zinc (filtered)	M17-My13776	NCP	mg/L	0.015	0.014	5.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	B17-My13605	NCP	mg/L	330	320	1.0	30%	Pass
Magnesium	B17-My13605	NCP	mg/L	890	880	1.0	30%	Pass
Potassium	B17-My10054	NCP	mg/L	2.9	2.9	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Onur Mehmet	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

 Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EM1705809**
Client : **AECOM Australia Pty Ltd**
Contact : **MS AVERYLL COYNE**
Address : **COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET
MELBOURNE VIC, AUSTRALIA 3004**
Telephone : **+61 03 9653 1234**
Project : **60537182**
Order number : **60537182/3.5**
C-O-C number : **----**
Sampler : **MEGAN WILLIAMS**
Site : **Fishermans Bend**
Quote number : **ME/199/16**
No. of samples received : **10**
No. of samples analysed : **6**

Page : 1 of 15
Laboratory : Environmental Division Melbourne
Contact : Carol Walsh
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9608
Date Samples Received : 10-May-2017 09:20
Date Analysis Commenced : 10-May-2017
Issue Date : 16-May-2017 08:09



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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.

- TDS by method for EM1705809 #6 EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- It is recognised that total metals are less than dissolved metals for samples #1 and #5. However, the difference is within experimental variation of the methods.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- EK059G: EM1705809-002 Nitrite and Nitrate as N (NO_x) result has been confirmed by re-preparation and re-analysis



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW81_8/5/17	GW80_8/5/17	GW67_9/5/17	GW43_9/5/17	GW82_9/5/17
Client sampling date / time				08-May-2017 00:00	08-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705809-001	EM1705809-002	EM1705809-003	EM1705809-004	EM1705809-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.28	6.56	7.71	5.98	6.46	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1140	754	1040	620	1740	
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	472	441	488	244	254	
Total Alkalinity as CaCO3	----	1	mg/L	472	441	488	244	254	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	373	158	192	169	453	
ED043S: Total Oxidised Sulfur as S									
Total Oxidised Sulfur as S	----	1	mg/L	117	77	70	74	205	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	52	40	191	73	564	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	167	97	121	105	206	
Magnesium	7439-95-4	1	mg/L	54	40	39	18	54	
Sodium	7440-23-5	1	mg/L	91	55	157	47	256	
Potassium	7440-09-7	1	mg/L	22	22	15	11	21	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.03	<0.01	0.11	0.11	
Arsenic	7440-38-2	0.001	mg/L	0.009	0.006	0.006	0.004	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	0.004	0.002	0.001	<0.001	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	0.012	0.021	0.004	0.078	0.051	
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	0.024	0.028	0.012	0.041	0.040	
Manganese	7439-96-5	0.001	mg/L	0.504	0.334	0.556	0.333	0.336	
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	16.7	8.48	3.08	3.36	5.65	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	2.41	2.02	9.35	12.3	3.16	
Arsenic	7440-38-2	0.001	mg/L	0.013	0.009	0.020	0.019	0.008	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW81_8/5/17	GW80_8/5/17	GW67_9/5/17	GW43_9/5/17	GW82_9/5/17
Client sampling date / time				08-May-2017 00:00	08-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705809-001	EM1705809-002	EM1705809-003	EM1705809-004	EM1705809-005	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0003	0.0004	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.010	0.008	0.040	0.048	0.011	
Copper	7440-50-8	0.001	mg/L	0.006	0.006	0.020	0.028	0.008	
Nickel	7440-02-0	0.001	mg/L	0.016	0.027	0.022	0.108	0.051	
Lead	7439-92-1	0.001	mg/L	0.007	0.004	0.010	0.014	0.005	
Zinc	7440-66-6	0.005	mg/L	0.049	0.047	0.177	0.353	0.070	
Manganese	7439-96-5	0.001	mg/L	0.472	0.340	0.616	0.418	0.330	
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	20.5	12.5	22.8	29.2	11.3	
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.9	0.9	0.8	0.5	0.4	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	1.37	2.78	1.62	0.33	0.44	
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	2.94	<0.01	<0.01	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	2.94	<0.01	<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	0.01	<0.01	<0.01	<0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	18.7	13.2	19.1	10.4	30.4	
Total Cations	----	0.01	meq/L	17.3	11.1	16.5	9.05	26.4	
Ionic Balance	----	0.01	%	3.79	8.81	7.52	7.21	7.08	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	29	17	14	7	7	
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L	<5	----	<5	<5	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW81_8/5/17	GW80_8/5/17	GW67_9/5/17	GW43_9/5/17	GW82_9/5/17
Client sampling date / time				08-May-2017 00:00	08-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705809-001	EM1705809-002	EM1705809-003	EM1705809-004	EM1705809-005	
				Result	Result	Result	Result	Result	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Isopropylbenzene	98-82-8	5	µg/L	<5	----	<5	<5	----	
n-Propylbenzene	103-65-1	5	µg/L	<5	----	<5	<5	----	
1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	----	<5	<5	----	
sec-Butylbenzene	135-98-8	5	µg/L	<5	----	<5	<5	----	
1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	----	<5	<5	----	
tert-Butylbenzene	98-06-6	5	µg/L	<5	----	<5	<5	----	
p-Isopropyltoluene	99-87-6	5	µg/L	<5	----	<5	<5	----	
n-Butylbenzene	104-51-8	5	µg/L	<5	----	<5	<5	----	
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L	<50	----	<50	<50	----	
2-Butanone (MEK)	78-93-3	50	µg/L	<50	----	<50	<50	----	
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	----	<50	<50	----	
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	----	<50	<50	----	
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L	<5	----	<5	<5	----	
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L	<5	----	<5	<5	----	
1,2-Dichloropropane	78-87-5	5	µg/L	<5	----	<5	<5	----	
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	----	<5	<5	----	
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	----	<5	<5	----	
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	----	<5	<5	----	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	----	<50	<50	----	
Chloromethane	74-87-3	50	µg/L	<50	----	<50	<50	----	
Vinyl chloride	75-01-4	50	µg/L	<50	----	<50	<50	----	
Bromomethane	74-83-9	50	µg/L	<50	----	<50	<50	----	
Chloroethane	75-00-3	50	µg/L	<50	----	<50	<50	----	
Trichlorofluoromethane	75-69-4	50	µg/L	<50	----	<50	<50	----	
1,1-Dichloroethene	75-35-4	5	µg/L	<5	----	<5	<5	----	
Iodomethane	74-88-4	5	µg/L	<5	----	<5	<5	----	
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	----	<5	<5	----	
1,1-Dichloroethane	75-34-3	5	µg/L	<5	----	<5	<5	----	
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	----	19	<5	----	
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	----	<5	<5	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW81_8/5/17	GW80_8/5/17	GW67_9/5/17	GW43_9/5/17	GW82_9/5/17
Client sampling date / time				08-May-2017 00:00	08-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705809-001	EM1705809-002	EM1705809-003	EM1705809-004	EM1705809-005	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1-Dichloropropylene	563-58-6	5	µg/L	<5	----	<5	<5	----	
Carbon Tetrachloride	56-23-5	5	µg/L	<5	----	<5	<5	----	
1.2-Dichloroethane	107-06-2	5	µg/L	<5	----	<5	<5	----	
Trichloroethene	79-01-6	5	µg/L	<5	----	<5	<5	----	
Dibromomethane	74-95-3	5	µg/L	<5	----	<5	<5	----	
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	----	<5	<5	----	
1.3-Dichloropropane	142-28-9	5	µg/L	<5	----	<5	<5	----	
Tetrachloroethene	127-18-4	5	µg/L	<5	----	<5	<5	----	
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	----	<5	<5	----	
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	----	<5	<5	----	
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	----	<5	<5	----	
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	----	<5	<5	----	
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	----	<5	<5	----	
Pentachloroethane	76-01-7	5	µg/L	<5	----	<5	<5	----	
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	----	<5	<5	----	
Hexachlorobutadiene	87-68-3	5	µg/L	<5	----	<5	<5	----	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L	<5	----	<5	<5	----	
Bromobenzene	108-86-1	5	µg/L	<5	----	<5	<5	----	
2-Chlorotoluene	95-49-8	5	µg/L	<5	----	<5	<5	----	
4-Chlorotoluene	106-43-4	5	µg/L	<5	----	<5	<5	----	
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	----	<5	<5	----	
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	----	<5	<5	----	
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	----	<5	<5	----	
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	----	<5	<5	----	
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	----	<5	<5	----	
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L	<5	----	<5	<5	----	
Bromodichloromethane	75-27-4	5	µg/L	<5	----	<5	<5	----	
Dibromochloromethane	124-48-1	5	µg/L	<5	----	<5	<5	----	
Bromoform	75-25-2	5	µg/L	<5	----	<5	<5	----	
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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW81_8/5/17	GW80_8/5/17	GW67_9/5/17	GW43_9/5/17	GW82_9/5/17
Client sampling date / time				08-May-2017 00:00	08-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705809-001	EM1705809-002	EM1705809-003	EM1705809-004	EM1705809-005	
				Result	Result	Result	Result	Result	
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	µg/L	1620	<100	190	180	<100	
C29 - C36 Fraction	----	50	µg/L	490	<50	50	120	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	2110	<50	240	300	<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	1920	<100	210	260	<100	
>C34 - C40 Fraction	----	100	µg/L	150	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	2070	<100	210	260	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
EP080: BTEXN									
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	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	<0.02	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	----	<0.02	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.36	----	<0.02	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	<0.02	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.26	----	0.03	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	<0.02	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW81_8/5/17	GW80_8/5/17	GW67_9/5/17	GW43_9/5/17	GW82_9/5/17
Client sampling date / time				08-May-2017 00:00	08-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705809-001	EM1705809-002	EM1705809-003	EM1705809-004	EM1705809-005	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	<0.1	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.59	----	<0.02	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.46	----	<0.02	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.33	----	<0.02	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.31	----	<0.01	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	<0.02	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	<0.02	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	<0.02	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	<0.02	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	<0.02	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	<0.05	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	<0.02	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	----	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	<0.02	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	<0.02	----	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	<0.05	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW81_8/5/17	GW80_8/5/17	GW67_9/5/17	GW43_9/5/17	GW82_9/5/17
Client sampling date / time				08-May-2017 00:00	08-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705809-001	EM1705809-002	EM1705809-003	EM1705809-004	EM1705809-005	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	<0.05	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	<0.05	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	<0.05	----	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	2.34	----	0.03	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.62	----	0.03	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	2.31	----	0.03	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%	82.0	----	103	99.6	----	
Toluene-D8	2037-26-5	5	%	103	----	95.8	97.8	----	
4-Bromofluorobenzene	460-00-4	5	%	105	----	73.0	102	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	81.1	104	96.9	98.2	101	
Toluene-D8	2037-26-5	2	%	96.3	99.2	105	91.7	99.2	
4-Bromofluorobenzene	460-00-4	2	%	111	120	120	112	120	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	75.5	----	79.5	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			GW57_9/5/17	----	----	----	----
		Client sampling date / time			09-May-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1705809-006	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.50	----	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1040	----	----	----	----	----
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	319	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	319	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	148	----	----	----	----	----
ED043S: Total Oxidised Sulfur as S									
Total Oxidised Sulfur as S	----	1	mg/L	80	----	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	97	----	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	30	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	18	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	147	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	46	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.08	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.013	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.004	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.011	----	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.073	----	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.96	----	----	----	----	----
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	17.2	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.036	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			GW57_9/5/17	----	----	----	----
		Client sampling date / time			09-May-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1705809-006	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	0.0004	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	0.051	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.039	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.026	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	0.067	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.206	----	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.128	----	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	27.8	----	----	----	----	----
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	----	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.5	----	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.27	----	----	----	----	----
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	----	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	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	12.2	----	----	----	----	----
Total Cations	----	0.01	meq/L	10.5	----	----	----	----	----
Ionic Balance	----	0.01	%	7.22	----	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	10	----	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L	<5	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW57_9/5/17	----	----	----	----
Client sampling date / time				09-May-2017 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1705809-006	-----	-----	-----	-----	
				Result	----	----	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Isopropylbenzene	98-82-8	5	µg/L	<5	----	----	----	----	
n-Propylbenzene	103-65-1	5	µg/L	<5	----	----	----	----	
1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	----	----	----	----	
sec-Butylbenzene	135-98-8	5	µg/L	<5	----	----	----	----	
1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	----	----	----	----	
tert-Butylbenzene	98-06-6	5	µg/L	<5	----	----	----	----	
p-Isopropyltoluene	99-87-6	5	µg/L	<5	----	----	----	----	
n-Butylbenzene	104-51-8	5	µg/L	<5	----	----	----	----	
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L	<50	----	----	----	----	
2-Butanone (MEK)	78-93-3	50	µg/L	<50	----	----	----	----	
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	----	----	----	----	
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	----	----	----	----	
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L	<5	----	----	----	----	
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L	<5	----	----	----	----	
1,2-Dichloropropane	78-87-5	5	µg/L	<5	----	----	----	----	
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	----	----	----	----	
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	----	----	----	----	
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	----	----	----	----	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	----	----	----	----	
Chloromethane	74-87-3	50	µg/L	<50	----	----	----	----	
Vinyl chloride	75-01-4	50	µg/L	<50	----	----	----	----	
Bromomethane	74-83-9	50	µg/L	<50	----	----	----	----	
Chloroethane	75-00-3	50	µg/L	<50	----	----	----	----	
Trichlorofluoromethane	75-69-4	50	µg/L	<50	----	----	----	----	
1,1-Dichloroethene	75-35-4	5	µg/L	<5	----	----	----	----	
Iodomethane	74-88-4	5	µg/L	<5	----	----	----	----	
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	----	----	----	----	
1,1-Dichloroethane	75-34-3	5	µg/L	<5	----	----	----	----	
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	----	----	----	----	
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			GW57_9/5/17	----	----	----	----
		Client sampling date / time			09-May-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1705809-006	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1-Dichloropropylene	563-58-6	5	µg/L	<5	----	----	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	----	----	----	----	----
1.2-Dichloroethane	107-06-2	5	µg/L	<5	----	----	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	----	----	----	----	----
Dibromomethane	74-95-3	5	µg/L	<5	----	----	----	----	----
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	----	----	----	----	----
1.3-Dichloropropane	142-28-9	5	µg/L	<5	----	----	----	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	----	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	----	----	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	----	----	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	----	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	----	----	----	----	----
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	----	----	----	----	----
Pentachloroethane	76-01-7	5	µg/L	<5	----	----	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	----	----	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	----	----	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L	<5	----	----	----	----	----
Bromobenzene	108-86-1	5	µg/L	<5	----	----	----	----	----
2-Chlorotoluene	95-49-8	5	µg/L	<5	----	----	----	----	----
4-Chlorotoluene	106-43-4	5	µg/L	<5	----	----	----	----	----
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	----	----	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	----	----	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	----	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	----	----	----	----	----
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	----	----	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L	<5	----	----	----	----	----
Bromodichloromethane	75-27-4	5	µg/L	<5	----	----	----	----	----
Dibromochloromethane	124-48-1	5	µg/L	<5	----	----	----	----	----
Bromoform	75-25-2	5	µg/L	<5	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			GW57_9/5/17				
		Client sampling date / time			09-May-2017 00:00				
Compound	CAS Number	LOR	Unit	EM1705809-006	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	----	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%	98.8	----	----	----	----	----
Toluene-D8	2037-26-5	5	%	102	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	5	%	103	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	97.1	----	----	----	----	----
Toluene-D8	2037-26-5	2	%	96.5	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	113	----	----	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
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
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	130

QUALITY CONTROL REPORT

Work Order	: EM1705809	Page	: 1 of 20
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 10-May-2017
Order number	: 60537182/3.5	Date Analysis Commenced	: 10-May-2017
C-O-C number	: ----	Issue Date	: 16-May-2017
Sampler	: MEGAN WILLIAMS		
Site	: Fishermans Bend		
Quote number	: ME/199/16		
No. of samples received	: 10		
No. of samples analysed	: 6		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
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: 881270)									
EM1705809-004	GW43_9/5/17	EA005-P: pH Value	----	0.01	pH Unit	5.98	5.93	0.840	0% - 20%
EM1705809-006	GW57_9/5/17	EA005-P: pH Value	----	0.01	pH Unit	7.50	7.47	0.401	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 880928)									
EM1705809-001	GW81_8/5/17	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1140	1100	3.12	0% - 20%
EM1705842-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	10400	10300	0.774	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 881268)									
EM1705801-007	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	111	112	1.32	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	111	112	1.32	0% - 20%
EM1705801-003	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	65	63	2.80	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	65	63	2.80	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 881271)									
EM1705809-004	GW43_9/5/17	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	244	235	3.88	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	244	235	3.88	0% - 20%
EM1705815-010	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
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 881054)									



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: 881054) - continued									
EM1705815-004	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	7410	8260	10.9	0% - 20%
EM1705809-001	GW81_8/5/17	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	373	374	0.268	0% - 20%
ED043S: Total Oxidised Sulfur as S (QC Lot: 887243)									
EM1705809-001	GW81_8/5/17	ED043S: Total Oxidised Sulfur as S	----	1	mg/L	117	113	3.11	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 881053)									
EM1705816-002	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	9	9	0.00	No Limit
EM1705809-001	GW81_8/5/17	ED045G: Chloride	16887-00-6	1	mg/L	52	52	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 881157)									
EM1705725-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	130	124	4.96	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	21	20	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	145	138	4.91	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.00	No Limit
EM1705836-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	51	52	2.66	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	57	59	3.55	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	119	125	4.64	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	340	357	5.08	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 881159)									
EM1705725-001	Anonymous	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	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.003	0.003	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	0.053	0.055	2.87	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.005	0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.05	0.02	97.8	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	2.40	2.48	3.26	0% - 20%
EM1705794-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0098	0.0092	5.63	0% - 20%
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	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	0.007	0.007	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.024	0.024	0.00	0% - 20%
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.619	0.622	0.542	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	3.35	3.38	0.888	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.05	0.08	40.4	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	0.22	0.22	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: 881161)									
EM1705809-006	GW57_9/5/17	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	0.013	0.013	0.00	0% - 50%
		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	0.073	0.074	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.011	0.012	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.08	0.09	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	0.96	0.98	2.50	0% - 50%
EM1705852-002	Anonymous	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	0.008	0.007	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	0.003	0.003	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	0.087	0.086	1.65	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.010	0.010	0.00	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.041	0.042	2.51	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	<0.05	<0.05	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 881149)									
EM1705785-001	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	0.208	0.202	2.84	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.005	0.004	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.058	0.058	0.00	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.038	0.039	0.00	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.050	0.049	3.03	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.119	0.120	0.00	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.06	0.06	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.14	0.14	0.00	No Limit
EM1705798-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	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	0.004	107	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.017	0.017	0.00	0% - 50%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.165	0.153	7.15	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 (%)
EG020T: Total Metals by ICP-MS (QC Lot: 881149) - continued									
EM1705798-001	Anonymous	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	0.031	0.048	42.4	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.11	0.14	24.2	0% - 50%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.09	54.1	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 881153)									
EM1705809-002	GW80_8/5/17	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	0.009	0.008	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.008	0.008	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.006	0.007	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.340	0.342	0.478	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.027	0.026	0.00	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.047	0.046	2.85	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	2.02	1.99	1.68	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	12.5	12.8	1.84	0% - 20%		
EM1705810-006	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0042	0.0044	4.58	0% - 20%
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	47.2	49.2	4.22	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.017	0.017	0.00	0% - 50%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.009	0.009	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	3.18	3.05	3.94	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.025	0.024	0.00	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.042	0.039	7.85	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	12.0	12.1	1.16	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	0.01	0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	16.0	16.2	0.964	0% - 20%		
EG035F: Dissolved Mercury by FIMS (QC Lot: 881158)									
EM1705808-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1705725-001	Anonymous	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: 881434)									
EM1705791-040	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1705801-006	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 881266)									
EM1705794-006	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1705801-003	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 881272)									
EM1705809-006	GW57_9/5/17	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.5	0.4	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 (%)
EK040P: Fluoride by PC Titrator (QC Lot: 881272) - continued									
EM1705815-010	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 881143)									
EM1705804-006	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1705847-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 881051)									
EM1705816-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1705809-001	GW81_8/5/17	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 881144)									
EM1705804-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	3.64	3.68	1.17	0% - 20%
EM1705847-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.27	0.26	0.00	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 881052)									
EM1705847-004	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.13	0.13	0.00	0% - 50%
EM1705809-001	GW81_8/5/17	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 882436)									
EM1705776-011	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	82	83	1.82	0% - 20%
EM1705809-005	GW82_9/5/17	EP005: Total Organic Carbon	----	1	mg/L	7	7	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 883326)									
EM1705809-001	GW81_8/5/17	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 883326)									
EM1705809-001	GW81_8/5/17	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 883326)									
EM1705809-001	GW81_8/5/17	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
EP074D: Fumigants (QC Lot: 883326)									
EM1705809-001	GW81_8/5/17	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	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 (%)
EP074D: Fumigants (QC Lot: 883326) - continued									
EM1705809-001	GW81_8/5/17	EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 883326)									
EM1705809-001	GW81_8/5/17	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit		
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 883326)									
EM1705809-001	GW81_8/5/17	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	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 (%)
EP074G: Trihalomethanes (QC Lot: 883326)									
EM1705809-001	GW81_8/5/17	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 879073)									
EM1705805-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 883325)									
EM1705824-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1705809-001	GW81_8/5/17	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 879073)									
EM1705805-001	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 883325)									
EM1705824-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1705809-001	GW81_8/5/17	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 883325)									
EM1705824-002	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
EM1705809-001	GW81_8/5/17	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
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 884163)									
EB1709218-002	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	0.02	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	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 (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 884163) - continued									
EB1709218-002	Anonymous	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EM1705831-002	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	920	0.95	3.33	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	120	0.12	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<20	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 884163)									
EB1709218-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EM1705831-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	10	0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<50	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<100	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 884163)									
EB1709218-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	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 (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 884163) - continued									
EB1709218-002	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EM1705831-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<20	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<50	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<50	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<50	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<50	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 884163)									
EB1709218-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EM1705831-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<50	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<50	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<50	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<50	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 884163)									
EB1709218-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.01	0.02	66.7	No Limit
EM1705831-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	1050	1.08	2.82	0% - 20%



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: 880928)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.0	96	106	
				<10	293 mg/L	100	96	106	
ED037P: Alkalinity by PC Titrator (QCLot: 881268)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	105	90	110	
ED037P: Alkalinity by PC Titrator (QCLot: 881271)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	98.4	90	110	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 881054)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	110	92	115	
				<1	100 mg/L	104	92	115	
ED043S: Total Oxidised Sulfur as S (QCLot: 887243)									
ED043S: Total Oxidised Sulfur as S	----	1	mg/L	<1	167 mg/L	86.4	85	118	
ED045G: Chloride by Discrete Analyser (QCLot: 881053)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	106	89	117	
				<1	1000 mg/L	104	92	112	
ED093F: Dissolved Major Cations (QCLot: 881157)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	100	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	96.1	89	107	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	98.1	89	107	
EG020F: Dissolved Metals by ICP-MS (QCLot: 881159)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	100	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.4	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	90.9	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.4	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.5	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.8	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.8	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.0	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.4	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.0	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	99.7	94	106	
EG020F: Dissolved Metals by ICP-MS (QCLot: 881161)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	99.6	93	105	



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	
EG020F: Dissolved Metals by ICP-MS (QCLot: 881161) - continued									
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.9	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.0	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.0	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.1	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.1	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.8	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	91.9	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	91.6	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.9	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	99.2	94	106	
EG020T: Total Metals by ICP-MS (QCLot: 881149)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	105	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	104	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	93.8	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.8	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.5	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.5	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	95.4	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.1	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.1	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	99	110	
EG020T: Total Metals by ICP-MS (QCLot: 881153)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	105	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.3	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	100	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.8	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.1	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.0	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	101	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	98.5	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	101	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	105	99	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 881158)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	90.6	88	117	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 881434)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.8	87	113	



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: 881266)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	103	85	112	
EK040P: Fluoride by PC Titrator (QCLot: 881272)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	97.6	85	112	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 881143)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	106	80	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 881051)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	98.5	94	107	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 881144)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	105	89	114	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 881052)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	105	94	108	
EP005: Total Organic Carbon (TOC) (QCLot: 882436)									
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	94.0	81	109	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 883326)									
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	94.2	81	119	
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	20 µg/L	94.4	79	123	
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	20 µg/L	89.6	71	115	
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	20 µg/L	90.8	72	114	
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	20 µg/L	91.6	72	114	
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	20 µg/L	93.6	74	112	
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	20 µg/L	92.2	73	114	
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	20 µg/L	95.5	70	115	
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	20 µg/L	89.5	62	116	
EP074B: Oxygenated Compounds (QCLot: 883326)									
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	200 µg/L	95.1	73	126	
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	200 µg/L	93.5	62	136	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	200 µg/L	95.2	73	132	
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	200 µg/L	91.4	68	136	
EP074C: Sulfonated Compounds (QCLot: 883326)									
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	20 µg/L	89.8	55	123	
EP074D: Fumigants (QCLot: 883326)									
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	20 µg/L	94.7	67	122	
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	20 µg/L	94.7	78	120	
EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	20 µg/L	86.9	70	118	
EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	20 µg/L	86.9	68	115	
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	20 µg/L	86.3	78	120	
EP074E: Halogenated Aliphatic Compounds (QCLot: 883326)									



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
EP074E: Halogenated Aliphatic Compounds (QCLot: 883326) - continued									
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	200 µg/L	98.5	62	140	
EP074: Chloromethane	74-87-3	50	µg/L	<50	200 µg/L	110	68	138	
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	102	64	139	
EP074: Bromomethane	74-83-9	50	µg/L	<50	200 µg/L	91.7	48	130	
EP074: Chloroethane	75-00-3	50	µg/L	<50	200 µg/L	102	71	130	
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	200 µg/L	96.4	71	126	
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	97.4	68	125	
EP074: Iodomethane	74-88-4	5	µg/L	<5	20 µg/L	78.3	27	120	
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	97.1	73	121	
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	20 µg/L	96.6	77	120	
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	101	79	120	
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	96.2	70	120	
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	20 µg/L	94.5	70	122	
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	87.1	66	119	
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	97.9	79	120	
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	96.4	75	120	
EP074: Dibromomethane	74-95-3	5	µg/L	<5	20 µg/L	87.9	77	118	
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	92.5	86	121	
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	20 µg/L	95.1	84	119	
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	96.7	75	119	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	86.0	75	112	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	20 µg/L	81.4	63	119	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	20 µg/L	79.5	54	119	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	94.4	81	125	
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	20 µg/L	91.4	81	125	
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	20 µg/L	90.5	63	109	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	20 µg/L	80.5	59	116	
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	105	60	122	
EP074F: Halogenated Aromatic Compounds (QCLot: 883326)									
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	98.3	84	118	
EP074: Bromobenzene	108-86-1	5	µg/L	<5	20 µg/L	92.6	74	119	
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	20 µg/L	91.6	76	114	
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	20 µg/L	89.9	73	113	
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	20 µg/L	96.0	76	114	
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	99.1	76	118	
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	98.1	81	113	
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	95.0	64	118	
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	20 µg/L	97.1	72	120	
EP074G: Trihalomethanes (QCLot: 883326)									



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	
EP074G: Trihalomethanes (QCLot: 883326) - continued									
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	95.2	78	118	
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	20 µg/L	86.5	69	115	
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	20 µg/L	83.2	69	109	
EP074: Bromoform	75-25-2	5	µg/L	<5	20 µg/L	81.6	62	111	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 879073)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	94.0	53	123	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	111	57	133	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	109	55	141	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 883325)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	104	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 879073)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	99.4	54	122	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	108	56	132	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	109	51	137	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 883325)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	99.9	65	125	
EP080: BTEXN (QCLot: 883325)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	109	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	116	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	111	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	114	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	115	78	128	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	107	71	129	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 884163)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	84.8	70	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	102	70	130	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	108	70	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	105	70	130	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	107	70	130	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	109	70	130	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 884163)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	90.9	70	130	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	81.4	70	130	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	86.6	70	130	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	96.4	70	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	89.0	70	130	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	90.4	70	130	



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	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 884163) - continued									
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	93.6	70	130	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	87.4	70	130	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	84.4	70	130	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	92.4	70	130	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	81.5	70	124	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 884163)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	88.0	70	130	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	112	70	130	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	86.5	70	129	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	1.25 µg/L	98.2	70	129	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	89.2	70	126	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	101	70	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	86.2	70	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 884163)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	105	70	130	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	101	70	130	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	85.8	70	130	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	87.0	70	130	

Matrix Spike (MS) Report

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

Sub-Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 881054)							
EM1705809-002	GW80_8/5/17	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130
ED043S: Total Oxidised Sulfur as S (QCLot: 887243)							
EM1705809-002	GW80_8/5/17	ED043S: Total Oxidised Sulfur as S	----	167 mg/L	128	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 881053)							
EM1705809-002	GW80_8/5/17	ED045G: Chloride	16887-00-6	400 mg/L	115	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 881159)							



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
EG020F: Dissolved Metals by ICP-MS (QCLot: 881159) - continued							
EM1705725-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	104	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	99.4	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	99.1	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	98.0	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	97.3	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	98.9	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	101	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	104	75	131
EG020F: Dissolved Metals by ICP-MS (QCLot: 881161)							
EM1705809-006	GW57_9/5/17	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	91.6	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	98.7	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	98.6	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	95.9	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	97.9	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	98.9	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	97.5	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	102	75	131
EG020T: Total Metals by ICP-MS (QCLot: 881149)							
EM1705785-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	93.9	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	102	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	105	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	103	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	112	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	98.8	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	108	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	96.6	74	116
EG020T: Total Metals by ICP-MS (QCLot: 881153)							
EM1705809-002	GW80_8/5/17	EG020A-T: Arsenic	7440-38-2	1 mg/L	99.8	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	94.4	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	97.0	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	91.6	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	105	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	93.4	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	96.6	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	98.1	74	116
EG035F: Dissolved Mercury by FIMS (QCLot: 881158)							
EM1705725-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	91.5	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 881434)							



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
EG035T: Total Recoverable Mercury by FIMS (QCLot: 881434) - continued							
EM1705791-041	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	94.8	70	130
EK040P: Fluoride by PC Titrator (QCLot: 881266)							
EM1705794-011	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	110	70	130
EK040P: Fluoride by PC Titrator (QCLot: 881272)							
EM1705815-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	76.4	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 881143)							
EM1705804-005	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	107	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 881051)							
EM1705809-002	GW80_8/5/17	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	85.9	80	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 881144)							
EM1705809-001	GW81_8/5/17	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	94.4	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 881052)							
EM1705809-002	GW80_8/5/17	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	85.6	79	123
EP005: Total Organic Carbon (TOC) (QCLot: 882436)							
EM1705776-012	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	82.5	80	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 883326)							
EM1705809-003	GW67_9/5/17	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	93.8	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	87.0	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 883326)							
EM1705809-003	GW67_9/5/17	EP074: Chlorobenzene	108-90-7	20 µg/L	105	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 879073)							
EM1705805-004	Anonymous	EP071: C10 - C14 Fraction	----	3368 µg/L	118	50	130
		EP071: C15 - C28 Fraction	----	14735 µg/L	121	54	136
		EP071: C29 - C36 Fraction	----	7856 µg/L	108	50	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 883325)							
EM1705809-003	GW67_9/5/17	EP080: C6 - C9 Fraction	----	280 µg/L	75.7	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 879073)							
EM1705805-004	Anonymous	EP071: >C10 - C16 Fraction	----	5225 µg/L	112	50	128
		EP071: >C16 - C34 Fraction	----	19994 µg/L	111	50	150
		EP071: >C34 - C40 Fraction	----	1449 µg/L	121	51	159
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 883325)							
EM1705809-003	GW67_9/5/17	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	68.7	44	122
EP080: BTEXN (QCLot: 883325)							
EM1705809-003	GW67_9/5/17	EP080: Benzene	71-43-2	20 µg/L	101	68	130



Sub-Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
						Low	High
EP080: BTEXN (QCLot: 883325) - continued							
EM1705809-003	GW67_9/5/17	EP080: Toluene	108-88-3	20 µg/L	105	72	132
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 884163)							
EB1709218-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	105	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	115	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	101	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	92.2	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	93.6	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	102	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 884163)							
EB1709218-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	82.9	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	109	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	87.4	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	91.0	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	91.4	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	79.0	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	88.0	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	90.2	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	70.8	50	130
		EP231X: Perfluorotridecanoic acid (PFTeDA)	72629-94-8	0.5 µg/L	75.6	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	97.3	50	130
		EP231C: Perfluoroalkyl Sulfonamides (QCLot: 884163)					
EB1709218-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	113	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	79.4	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	83.6	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	1.25 µg/L	77.1	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	87.9	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	87.0	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	105	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 884163)							
EB1709218-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	116	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	117	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	109	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	75.4	50	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1705809	Page	: 1 of 13
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 10-May-2017
Site	: Fishermans Bend	Issue Date	: 16-May-2017
Sampler	: MEGAN WILLIAMS	No. of samples received	: 10
Order number	: 60537182/3.5	No. of samples analysed	: 6

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	EM1705809--002	GW80_8/5/17	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
GW81_8/5/17,	GW80_8/5/17	----	----	----	11-May-2017	08-May-2017	3
Clear Plastic Bottle - Natural							
GW67_9/5/17,	GW43_9/5/17,	----	----	----	11-May-2017	09-May-2017	2
GW82_9/5/17,	GW57_9/5/17						

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
TRH - Semivolatile Fraction	1	12	8.33	10.00	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	Sample Date	Extraction / Preparation			Analysis			
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
GW81_8/5/17,	08-May-2017	GW80_8/5/17	----	----	----	11-May-2017	08-May-2017	*
Clear Plastic Bottle - Natural (EA005-P)								
GW67_9/5/17,	09-May-2017	GW43_9/5/17,	----	----	----	11-May-2017	09-May-2017	*
GW82_9/5/17,		GW57_9/5/17						



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
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) GW81_8/5/17, GW80_8/5/17	08-May-2017	----	----	----	11-May-2017	15-May-2017	✓
Clear Plastic Bottle - Natural (EA015H) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	11-May-2017	16-May-2017	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) GW81_8/5/17, GW80_8/5/17	08-May-2017	----	----	----	11-May-2017	22-May-2017	✓
Clear Plastic Bottle - Natural (ED037-P) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	11-May-2017	23-May-2017	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) GW81_8/5/17, GW80_8/5/17	08-May-2017	----	----	----	11-May-2017	05-Jun-2017	✓
Clear Plastic Bottle - Natural (ED041G) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	11-May-2017	06-Jun-2017	✓
ED043S: Total Oxidised Sulfur as S							
Clear Plastic Bottle - Natural (ED043S) GW81_8/5/17, GW80_8/5/17	08-May-2017	15-May-2017	05-Jun-2017	✓	15-May-2017	05-Jun-2017	✓
Clear Plastic Bottle - Natural (ED043S) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	15-May-2017	06-Jun-2017	✓	15-May-2017	06-Jun-2017	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) GW81_8/5/17, GW80_8/5/17	08-May-2017	----	----	----	11-May-2017	05-Jun-2017	✓
Clear Plastic Bottle - Natural (ED045G) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	11-May-2017	06-Jun-2017	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW81_8/5/17, GW80_8/5/17	08-May-2017	----	----	----	12-May-2017	05-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	12-May-2017	06-Jun-2017	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW81_8/5/17, GW80_8/5/17	08-May-2017	----	----	----	11-May-2017	04-Nov-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	11-May-2017	05-Nov-2017	✓



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
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) GW81_8/5/17, GW80_8/5/17	08-May-2017	11-May-2017	04-Nov-2017	✓	11-May-2017	04-Nov-2017	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	11-May-2017	05-Nov-2017	✓	11-May-2017	05-Nov-2017	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW81_8/5/17, GW80_8/5/17	08-May-2017	----	----	----	12-May-2017	05-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	12-May-2017	06-Jun-2017	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) GW81_8/5/17, GW80_8/5/17	08-May-2017	----	----	----	11-May-2017	05-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	11-May-2017	06-Jun-2017	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P) GW81_8/5/17, GW80_8/5/17	08-May-2017	----	----	----	11-May-2017	05-Jun-2017	✓
Clear Plastic Bottle - Natural (EK040P) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	11-May-2017	06-Jun-2017	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW81_8/5/17, GW80_8/5/17	08-May-2017	----	----	----	12-May-2017	05-Jun-2017	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	12-May-2017	06-Jun-2017	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) GW81_8/5/17, GW80_8/5/17	08-May-2017	----	----	----	10-May-2017	10-May-2017	✓
Clear Plastic Bottle - Natural (EK057G) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	10-May-2017	11-May-2017	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW81_8/5/17, GW80_8/5/17	08-May-2017	----	----	----	11-May-2017	05-Jun-2017	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW67_9/5/17, GW82_9/5/17, GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	11-May-2017	06-Jun-2017	✓



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) GW81_8/5/17,	GW80_8/5/17	08-May-2017	----	----	----	10-May-2017	10-May-2017	✓
Clear Plastic Bottle - Natural (EK071G) GW67_9/5/17, GW82_9/5/17,	GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	10-May-2017	11-May-2017	✓
EP005: Total Organic Carbon (TOC)								
Amber VOC Vial - Sulfuric Acid (EP005) GW81_8/5/17,	GW80_8/5/17	08-May-2017	----	----	----	11-May-2017	05-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP005) GW67_9/5/17, GW82_9/5/17,	GW43_9/5/17, GW57_9/5/17	09-May-2017	----	----	----	11-May-2017	06-Jun-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) GW81_8/5/17		08-May-2017	12-May-2017	22-May-2017	✓	12-May-2017	22-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074) GW67_9/5/17, GW57_9/5/17	GW43_9/5/17,	09-May-2017	12-May-2017	23-May-2017	✓	12-May-2017	23-May-2017	✓
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) GW81_8/5/17		08-May-2017	12-May-2017	22-May-2017	✓	12-May-2017	22-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074) GW67_9/5/17, GW57_9/5/17	GW43_9/5/17,	09-May-2017	12-May-2017	23-May-2017	✓	12-May-2017	23-May-2017	✓
EP074C: Sulfonated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) GW81_8/5/17		08-May-2017	12-May-2017	22-May-2017	✓	12-May-2017	22-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074) GW67_9/5/17, GW57_9/5/17	GW43_9/5/17,	09-May-2017	12-May-2017	23-May-2017	✓	12-May-2017	23-May-2017	✓
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074) GW81_8/5/17		08-May-2017	12-May-2017	22-May-2017	✓	12-May-2017	22-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074) GW67_9/5/17, GW57_9/5/17	GW43_9/5/17,	09-May-2017	12-May-2017	23-May-2017	✓	12-May-2017	23-May-2017	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) GW81_8/5/17		08-May-2017	12-May-2017	22-May-2017	✓	12-May-2017	22-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074) GW67_9/5/17, GW57_9/5/17	GW43_9/5/17,	09-May-2017	12-May-2017	23-May-2017	✓	12-May-2017	23-May-2017	✓



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
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) GW81_8/5/17	08-May-2017	12-May-2017	22-May-2017	✓	12-May-2017	22-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074) GW67_9/5/17, GW57_9/5/17	GW43_9/5/17, 09-May-2017	12-May-2017	23-May-2017	✓	12-May-2017	23-May-2017	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074) GW81_8/5/17	08-May-2017	12-May-2017	22-May-2017	✓	12-May-2017	22-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074) GW67_9/5/17, GW57_9/5/17	GW43_9/5/17, 09-May-2017	12-May-2017	23-May-2017	✓	12-May-2017	23-May-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) GW81_8/5/17	GW80_8/5/17 08-May-2017	11-May-2017	15-May-2017	✓	12-May-2017	20-Jun-2017	✓
Amber Glass Bottle - Unpreserved (EP071) GW67_9/5/17, GW82_9/5/17	GW43_9/5/17, GW57_9/5/17 09-May-2017	11-May-2017	16-May-2017	✓	12-May-2017	20-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW81_8/5/17	GW80_8/5/17 08-May-2017	12-May-2017	22-May-2017	✓	12-May-2017	22-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW67_9/5/17, GW82_9/5/17	GW43_9/5/17, GW57_9/5/17 09-May-2017	12-May-2017	23-May-2017	✓	12-May-2017	23-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) GW81_8/5/17	GW80_8/5/17 08-May-2017	11-May-2017	15-May-2017	✓	12-May-2017	20-Jun-2017	✓
Amber Glass Bottle - Unpreserved (EP071) GW67_9/5/17, GW82_9/5/17	GW43_9/5/17, GW57_9/5/17 09-May-2017	11-May-2017	16-May-2017	✓	12-May-2017	20-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW81_8/5/17	GW80_8/5/17 08-May-2017	12-May-2017	22-May-2017	✓	12-May-2017	22-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW67_9/5/17, GW82_9/5/17	GW43_9/5/17, GW57_9/5/17 09-May-2017	12-May-2017	23-May-2017	✓	12-May-2017	23-May-2017	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) GW81_8/5/17	GW80_8/5/17 08-May-2017	12-May-2017	22-May-2017	✓	12-May-2017	22-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW67_9/5/17, GW82_9/5/17	GW43_9/5/17, GW57_9/5/17 09-May-2017	12-May-2017	23-May-2017	✓	12-May-2017	23-May-2017	✓



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
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) GW81_8/5/17	08-May-2017	----	----	----	14-May-2017	04-Nov-2017	✓
HDPE (no PTFE) (EP231X) GW67_9/5/17	09-May-2017	----	----	----	14-May-2017	05-Nov-2017	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) GW81_8/5/17	08-May-2017	----	----	----	14-May-2017	04-Nov-2017	✓
HDPE (no PTFE) (EP231X) GW67_9/5/17	09-May-2017	----	----	----	14-May-2017	05-Nov-2017	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) GW81_8/5/17	08-May-2017	----	----	----	14-May-2017	04-Nov-2017	✓
HDPE (no PTFE) (EP231X) GW67_9/5/17	09-May-2017	----	----	----	14-May-2017	05-Nov-2017	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) GW81_8/5/17	08-May-2017	----	----	----	14-May-2017	04-Nov-2017	✓
HDPE (no PTFE) (EP231X) GW67_9/5/17	09-May-2017	----	----	----	14-May-2017	05-Nov-2017	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) GW81_8/5/17	08-May-2017	----	----	----	14-May-2017	04-Nov-2017	✓
HDPE (no PTFE) (EP231X) GW67_9/5/17	09-May-2017	----	----	----	14-May-2017	05-Nov-2017	✓



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	
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	30	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	11	18.18	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	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	13	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as S	ED043S	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	30	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	11	18.18	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



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	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as S	ED043S	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	11	9.09	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	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as S	ED043S	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	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	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	13	7.69	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	
Matrix Spikes (MS) - Continued							
Total Oxidised Sulfur as S	ED043S	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	11.11	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 S	ED043S	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 S.
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)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. 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 SO ₄ DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. 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	EP074	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)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.
<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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1705809

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 3
Order number	: 60537182	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermans Bend		
Sampler	: MEGAN WILLIAMS		

Dates

Date Samples Received	: 10-May-2017 09:20	Issue Date	: 10-May-2017
Client Requested Due Date	: 17-May-2017	Scheduled Reporting Date	: 17-May-2017

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 1.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 10 / 6

General Comments

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



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PC)	WATER - EA015H Total Dissolved Solids - High Level	WATER - EG020F Dissolved Metals by ICPMS	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - W-02 8 Metals	WATER - W-02T 8 metals (Total)	WATER - W-09 TRH/VOC
EM1705809-001	08-May-2017 00:00	GW81_8/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705809-002	08-May-2017 00:00	GW80_8/5/17	✓	✓	✓		✓		
EM1705809-003	09-May-2017 00:00	GW67_9/5/17	✓	✓	✓	✓	✓	✓	
EM1705809-004	09-May-2017 00:00	GW43_9/5/17	✓	✓	✓		✓	✓	
EM1705809-005	09-May-2017 00:00	GW82_9/5/17	✓	✓	✓		✓		
EM1705809-006	09-May-2017 00:00	GW57_9/5/17	✓	✓	✓		✓	✓	

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) WATER No analysis requested	WATER - EG020T Total Recoverable Metals by ICPMS (including WATER - EP005 Total Organic Carbon (TOC))	WATER - W-05T TRH/BTEXN/8 Metals (Total)
EM1705809-001	08-May-2017 00:00	GW81_8/5/17		✓	✓
EM1705809-002	08-May-2017 00:00	GW80_8/5/17		✓	✓
EM1705809-003	09-May-2017 00:00	GW67_9/5/17		✓	✓
EM1705809-004	09-May-2017 00:00	GW43_9/5/17		✓	✓
EM1705809-005	09-May-2017 00:00	GW82_9/5/17		✓	✓
EM1705809-006	09-May-2017 00:00	GW57_9/5/17		✓	✓
EM1705809-007	08-May-2017 00:00	QC01_8/5/17	✓		
EM1705809-008	08-May-2017 00:00	QC02_8/5/17	✓		
EM1705809-009	09-May-2017 00:00	QC03_9/5/17	✓		
EM1705809-010	09-May-2017 00:00	QC04_9/5/17	✓		

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

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

Method	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator							

Issue Date : 10-May-2017
 Page : 3 of 3
 Work Order : EM1705809 Amendment 0
 Client : AECOM Australia Pty Ltd



GW43_9/5/17	Clear Plastic Bottle - Natural	----	09-May-2017	10-May-2017	x	----	----
GW57_9/5/17	Clear Plastic Bottle - Natural	----	09-May-2017	10-May-2017	x	----	----
GW67_9/5/17	Clear Plastic Bottle - Natural	----	09-May-2017	10-May-2017	x	----	----
GW80_8/5/17	Clear Plastic Bottle - Natural	----	08-May-2017	10-May-2017	x	----	----
GW81_8/5/17	Clear Plastic Bottle - Natural	----	08-May-2017	10-May-2017	x	----	----
GW82_9/5/17	Clear Plastic Bottle - Natural	----	09-May-2017	10-May-2017	x	----	----

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email

AP_CustomerService.ANZ@aecom.com

AVERYLL COYNE

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 URS (EQUIS_V5_URS)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN_EQUIS)

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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1705809

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 3
Order number	: 60537182/3.5	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermans Bend		
Sampler	: MEGAN WILLIAMS		

Dates

Date Samples Received	: 10-May-2017 09:20	Issue Date	: 10-May-2017
Client Requested Due Date	: 17-May-2017	Scheduled Reporting Date	: 17-May-2017

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 1.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 10 / 6

General Comments

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



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020F Dissolved Metals by ICPMS	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - NT-01 & 02A Ca, Mg, Na, K, Cl, SO4, Alkalinity & Fluoride	WATER - NT-04 Nitrite and Nitrate	WATER - W-02 8 Metals	WATER - W-02T 8 metals (Total)
EM1705809-001	08-May-2017 00:00	GW81_8/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705809-002	08-May-2017 00:00	GW80_8/5/17	✓	✓		✓	✓		
EM1705809-003	09-May-2017 00:00	GW67_9/5/17	✓	✓	✓	✓	✓	✓	
EM1705809-004	09-May-2017 00:00	GW43_9/5/17	✓	✓		✓	✓	✓	
EM1705809-005	09-May-2017 00:00	GW82_9/5/17	✓	✓		✓	✓		
EM1705809-006	09-May-2017 00:00	GW57_9/5/17	✓	✓		✓	✓	✓	

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PC)	WATER - EA015H Total Dissolved Solids - High Level	WATER - ED043S Total Oxidised Sulfur as S	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - EK071G Reactive Phosphorus by Discrete analyser	WATER - EP005 Total Organic Carbon (TOC)	WATER - W-09 TRH/VOC
EM1705809-001	08-May-2017 00:00	GW81_8/5/17	✓	✓	✓	✓	✓	✓	
EM1705809-002	08-May-2017 00:00	GW80_8/5/17	✓	✓	✓	✓	✓		
EM1705809-003	09-May-2017 00:00	GW67_9/5/17	✓	✓	✓	✓	✓	✓	
EM1705809-004	09-May-2017 00:00	GW43_9/5/17	✓	✓	✓	✓	✓	✓	
EM1705809-005	09-May-2017 00:00	GW82_9/5/17	✓	✓	✓	✓	✓		
EM1705809-006	09-May-2017 00:00	GW57_9/5/17	✓	✓	✓	✓	✓	✓	

Q4AN - Generic Chain of Custody Form

Q4AN(EV)-007-FM

CONSULTANT: **AECOM** ADDRESS / OFFICE: **727 Collins St Dock** SAMPLER: **Megan Williams**
 PROJECT MANAGER (PM): **Averyll Coyne** SITE: **Fishmans Bend** MOBILE: **0452316605** PHONE: _____
 PROJECT NUMBER & TASK CODE: **6053782** P.O. NO.: _____ EMAIL REPORT TO: **Averyll.Coyne@aecom.com**
 RESULTS REQUIRED (Date): **9/9** QUOTE NO.: _____ ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

Destination Laboratory

ALS

FOR LABORATORY USE ONLY:
 COOLER SEAL (circle appropriate)
 Intact: Yes No N/A
 SAMPLE TEMPERATURE
 CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

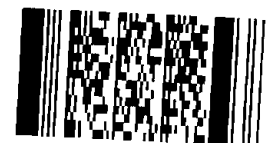
Notes: e.g. Highly contaminated sample
 e.g. "High PAHs expected".
 Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)

CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	pH, TDS, TOC	Total Recoverable Hydrocarbons	VOC EPA074	BTEXN	PFAS	Dissolved Metals	Total Metals	HOLD
1	9W81-8/5/17	W	8.5.17			12	X	X	X		X	X	X	
2	9W80-8/5/17		8.5.17			10	X	X	X		X	X	X	
3	9W67-9/5/17		9.5.17			12	X	X	X		X	X	X	
4	9W43-9/5/17		9.5.17			10	X	X	X		X	X	X	
5	9W82-9/5/17		9.5.17			10	X	X	X		X	X	X	
6	9W57-9/5/17		9.5.17			10	X	X	X		X	X	X	
7	QC01-8/5/17		8.5.17											X
8	QC02-8/5/17		8.5.17											X
9	QC03-9/5/17		9.5.17											X
10	QC04-9/5/17	V	9.5.17											X

Environmental Division
 Melbourne
 Work Order Reference
EM1705809



Telephone : + 61-3-8549 9600

RELINQUISHED BY: Name: **Megan Williams** Date: **10/5/17** Of: **AECOM** Time: **7.30**
 RECEIVED BY: Name: _____ Date: _____ Of: _____ Time: _____
 RECEIVED BY: Name: **M. N. N.** Date: **10/5** Of: **AN** Time: **9.20**
 METHOD OF SHIPMENT: _____
 Con' Note No: _____
 Transport Co: _____

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
 Soil Container Codes: Jar = Unpreserved glass jar

QM - Generic Chain of Custody Form

CONSULTANT: ACOM	ADDRESS / OFFICE: 727 Collins St Park	SAMPLER: Megan Williams	Destination Laboratory
PROJECT MANAGER (PM): Averyll Coyne	SITE: Fishermans Bend	MOBILE: 0452316605	ALS
PROJECT NUMBER & TASK CODE: 6053782	P.O. NO.:	EMAIL REPORT TO: Averyll.Coyne@acom.com	
RESULTS REQUIRED (Date): 9/5	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:	
COOLER SEAL (circle appropriate)			
Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>			
SAMPLE TEMPERATURE			
CHILLED: Yes <input type="checkbox"/> No <input type="checkbox"/>			

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		PH, TDS, TOC	Total Recoverable Hydrocarbons	VOC EP074	BTEXN	PFAS	Dissolved Metals	Total Metals	HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles								
1	9W81-8/5/17	W	8.5.17			12	X	X	X		X	X	X	
2	9W80-8/5/17		8.5.17			10	X	X	X		X	X	X	
3	9W67-9/5/17		9.5.17			12	X	X	X		X	X	X	
4	9W43-9/5/17		9.5.17			10	X	X	X		X	X	X	
5	9W82-9/5/17		9.5.17			10	X	X	X		X	X	X	
6	9W57-9/5/17		9.5.17			10	X	X	X		X	X	X	
7	QC01-8/5/17		8.5.17											X
8	QC02-8/5/17		8.5.17											X
9	QC03-9/5/17		9.5.17											X
10	QC04-9/5/17	V	9.5.17											X

Environmental Division
Melbourne
Work Order Reference
EM1705809



Telephone : + 61-3-8549 9600

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Megan Williams	Date: 10/5/17	Name:	Date:	Name: MARIE	Date: 10/5	Con' Note No:
Of: ACOM	Time: 7.30	Of:	Time:	Of: AC	Time: 9.00	Transport Co:

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
Soil Container Codes: Jar = Unpreserved glass jar

Tomasz Lubacz

From: Peter Ravlic
Sent: Wednesday, 10 May 2017 2:24 PM
To: Tomasz Lubacz
Subject: FW: CoC for ALS Workorder : EM1705809 | Overall Description: Fishermans Bend
Attachments: EM1705809_COC.pdf; ME-099-17 - V3 AECOM - Fishermans bend Employment Precinct.pdf

Importance: High

Regards

Peter Ravlic

Client Services Officer – Springvale

Environmental



T +61 3 8549 9600
F +61 3 8549 9626
Peter.Ravlic@alsglobal.com
2-4 Westall Rd
Springvale Vic 3171
Australia

From: Coyne, Averyll [mailto:Averyll.Coyne@aecom.com]
Sent: Wednesday, 10 May 2017 2:22 PM
To: Peter Ravlic <peter.ravlic@alsglobal.com>; Carol Walsh <Carol.Walsh@alsglobal.com>; Bronwyn Sheen <bronwyn.sheen@alsglobal.com>
Cc: Williams, Megan <Megan.Williams@aecom.com>; Muller, Jacob <Jacob.Muller@aecom.com>; Kaur, Navjot <Navjot.Kaur@aecom.com>; Scherer, Gavin <Gavin.Scherer@aecom.com>
Subject: FW: CoC for ALS Workorder : EM1705809 | Overall Description: Fishermans Bend
Importance: High

Hi ALS Team,

Further to the attached COC, can you please ensure that samples 1-6 (ALS ID's) are also analysed for the following:

- Nitrogen Oxides / Sulfur Oxides
- Ionic Chemistry (Na, Ca, Mg, K, Cl, HCO₃, CO₃, NO₂, NH₄, NH₃, PO₄, SO₄, F and Mn)
- Dissolved and Total Metals are both to include As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se and Hg)

Note also that:

- TRH is to include C6-C40
- The PFAS suite is the Full suite (28 analytes)
- Megan or I will be in touch regarding the samples on hold.
- Please refer to the attached quote.
- The task number is 3.5.

Please phone me if you have any questions.

Kind Regards
Averyll

Averyll Coyne

Principal Environmental Scientist
D +61 3 9653 8072 M +61 499 252 502
Averyll.Coyne@aecom.com

AECOM

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aecom.com

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From: angel-no-reply@alsglobal.com [<mailto:angel-no-reply@alsglobal.com>]

Sent: Wednesday, 10 May 2017 1:31 PM

To: Coyne, Averyll

Subject: CoC for ALS Workorder : EM1705809 | Overall Description: Fishermans Bend



Deliverables for ALS Workorder EM1705809

Project: 60537182

Overall Description: Fishermans Bend

Dear AVERYLL COYNE,

Please find enclosed the following deliverables for **EM1705809**:

- EM1705809_COC.pdf

Report Recipients

- AVERYLL COYNE
 - EM1705809_COC.pdf (Email)

www.alsglobal.com



ALS Quotation number: <i>Please quote on COCs</i>	ME/099/17	Version:	3
COMPANY:	AECOM SERVICES		
ATTENTION:	Averyll Coyne	Date:	10/5/17
EMAIL:	Averyll.Coyne@aecom.com	Phone No:	9653 8072
CLIENT REF/ PROJECT:	FISHERMANS BEND EMPLOYMENT PRECINCT	Pages:	7
FROM:	Peter Ravlic	Quotation Validity:	DECEMBER 2018

Dear Averyll,

Thank you for providing ALS the opportunity to submit this quotation. ALS is very keen to work with you on this important project, delivering leading quality, exceptional service & communication and expert technical support combined with automated DQO reporting to assist with quality review.

This quote has been updated to provide amendments to sample numbers and additional testing.

This quotation has been developed based upon the information provided and is valid for 90 days. Please ensure that we have interpreted your project scope correctly. The prices provided in this proposal apply for primary laboratory sample testing only (as opposed to secondary/QC testing).

Please do not hesitate to contact ALS for updating or accepting this quote, should this be required and/or to order the required sample containers (peter.ravlic@alsglobal.com)

Yours Sincerely,

Reviewed and Approved by:

Peter Ravlic
Client Services Officer- VIC
Environmental Division
Direct: + 61 3 8549 9645

Bronwyn Sheen
Client Services Manager - VIC
Environmental Division

Project Scope / Service Details

Sample No/Type/Batch size:	42 soils plus 43 groundwaters plus QC		
Commencement Date/Duration:	April 2017		
Relevant Guidelines / levels:	NEPM		
Internal ALS Project Manager:	Peter Ravlic		
Quoted Turnaround (working days):	5		
Surcharges for fast TAT if needed:	One day: Rates +40%	Two day: Rates +20%	Three day: Rates +10%
Tests which may limit standard or fast TAT or require partial reporting:	All analysis conducted at ALS Springvale		
Short Holding Time Tests:	Nitrate/Nitrite, Reactive P = 2 day HT		

CERTIFICATE OF ANALYSIS

Work Order : **EM1705994**
Client : **AECOM Australia Pty Ltd**
Contact : **MS AVERYLL COYNE**
Address : **COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET
MELBOURNE VIC, AUSTRALIA 3004**
Telephone : **+61 03 9653 1234**
Project : **60537182**
Order number : **60537182 3.5**
C-O-C number : **----**
Sampler : **JM, MW**
Site : **Fishermans Bend**
Quote number : **ME/199/16**
No. of samples received : **30**
No. of samples analysed : **23**

Page : 1 of 34
Laboratory : Environmental Division Melbourne
Contact : Carol Walsh
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9608
Date Samples Received : 12-May-2017 10:40
Date Analysis Commenced : 12-May-2017
Issue Date : 22-May-2017 16:44



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Herman Lin	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- TDS by method EA-015 for EM1705994 #4, 14-16, 19-23 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- It is recognised that total metals is less than dissolved metals for sample EM1705994-004. However, the difference is within experimental variation of the methods.
- **EP074-WF: Sample EM1705994-009 has LOR raised for Acetone due to laboratory background.**
- Sample 'MW9AI_11/5/17' was filtered through a 0.45um filter prior to the dissolved metals analysis.
- Ionic Balance out of acceptable limits for sample #20 and #22 due to analytes not quantified in this report.
- 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 #9, #15 and #16.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- 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	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time				10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.77	7.35	7.53	5.53	7.49	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	409	1030	1200	349	614	
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	224	694	439	6	400	
Total Alkalinity as CaCO3	----	1	mg/L	224	694	439	6	400	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	89	245	114	173	129	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	170	308	136	168	176	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	24	56	346	24	30	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	81	129	97	43	87	
Magnesium	7439-95-4	1	mg/L	15	59	27	11	32	
Sodium	7440-23-5	1	mg/L	22	132	220	18	64	
Potassium	7440-09-7	1	mg/L	5	20	20	2	12	
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.002	0.007	0.002	0.021	0.002	
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	0.006	0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.134	0.408	0.210	0.319	0.172	
Nickel	7440-02-0	0.001	mg/L	0.018	0.032	0.051	0.021	0.022	
Zinc	7440-66-6	0.005	mg/L	0.010	0.013	0.010	0.053	0.009	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.012	0.039	0.026	0.023	0.009	
Cadmium	7440-43-9	0.0001	mg/L	0.0013	0.0002	0.0012	<0.0001	0.0002	
Chromium	7440-47-3	0.001	mg/L	0.018	0.056	0.050	0.012	0.015	
Copper	7440-50-8	0.001	mg/L	0.010	0.018	0.017	0.001	0.026	
Nickel	7440-02-0	0.001	mg/L	0.023	0.065	0.074	0.018	0.029	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time				10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Lead	7439-92-1	0.001	mg/L	0.039	0.210	0.024	<0.001	0.036	
Zinc	7440-66-6	0.005	mg/L	0.060	0.073	0.228	0.038	0.092	
Manganese	7439-96-5	0.001	mg/L	0.210	0.544	0.321	0.328	0.207	
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.9	0.2	0.5	1.0	0.5	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.18	11.5	3.30	0.16	2.47	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.18	11.4	3.27	0.16	2.46	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.07	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	1.03	<0.01	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	1.10	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	<0.01	0.06	0.03	<0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	7.00	20.5	20.9	4.40	11.5	
Total Cations	----	0.01	meq/L	6.36	17.5	17.1	3.88	10.1	
Ionic Balance	----	0.01	%	4.82	7.88	9.89	6.20	6.75	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	5	10	12	22	9	
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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time				10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	1	µg/L	<1	----	----	----	<1	
Isopropylbenzene	98-82-8	1	µg/L	<1	----	----	----	<1	
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	220	----	----	----	<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	<1	----	----	----	<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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time					10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1-Dichloroethane	75-34-3	1	µg/L	<1	----	----	----	----	<1
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	----	----	----	----	<1
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



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time					10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	<5
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	<0.6	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.6	<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	110	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	100	<50	110	<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	140	<100	140	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	140	<100	140	<100	<100	<100



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time				10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
EP080: BTEXN									
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	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	----	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	----	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	----	----	----	0.04	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	----	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	----	0.07	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	----	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	----	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	----	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	----	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	----	----	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	----	----	0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	----	----	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	----	----	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	----	----	<0.02	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time				10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	----	----	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	----	----	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	----	----	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	----	----	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	----	----	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	----	----	<0.05	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	----	----	----	----	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	----	----	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	----	----	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	----	----	<0.02	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	----	----	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	----	----	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	----	----	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	----	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	----	----	----	0.12	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	----	0.11	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time				10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EP231P: PFAS Sums - Continued									
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	----	----	0.12
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	82.8	----	----	----	----	90.6
Toluene-D8	2037-26-5	1	%	73.4	----	----	----	----	73.5
4-Bromofluorobenzene	460-00-4	1	%	82.7	----	----	----	----	80.1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	42.2	36.2	37.3	35.0	35.7	
2-Chlorophenol-D4	93951-73-6	1	%	99.5	88.4	91.1	84.4	88.2	
2,4,6-Tribromophenol	118-79-6	1	%	59.8	58.9	81.5	77.1	77.0	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	94.6	82.8	91.5	88.9	82.7	
Anthracene-d10	1719-06-8	1	%	110	111	114	110	115	
4-Terphenyl-d14	1718-51-0	1	%	110	102	102	98.1	104	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	77.3	81.2	81.3	90.6	83.4	
Toluene-D8	2037-26-5	2	%	75.1	74.0	74.1	80.6	74.7	
4-Bromofluorobenzene	460-00-4	2	%	86.6	80.0	81.9	90.6	84.5	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	----	----	----	104	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.54	7.35	7.48	6.17	7.18	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	494	572	4390	851	2700	
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	408	503	180	91	499	
Total Alkalinity as CaCO3	----	1	mg/L	408	503	180	91	499	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	40	8	336	42	121	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	55	20	503	52	248	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	24	24	2040	11	347	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	32	74	356	26	28	
Magnesium	7439-95-4	1	mg/L	28	16	92	6	9	
Sodium	7440-23-5	1	mg/L	79	88	817	19	366	
Potassium	7440-09-7	1	mg/L	24	23	33	5	15	
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.050	0.006	0.001	<0.001	0.027	
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	0.003	0.001	<0.001	0.002	0.040	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.099	0.262	0.171	0.007	0.027	
Nickel	7440-02-0	0.001	mg/L	0.024	0.017	0.018	0.074	0.048	
Zinc	7440-66-6	0.005	mg/L	0.008	0.010	0.012	0.281	0.012	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.125	0.007	0.010	0.011	0.090	
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0004	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.014	0.004	0.020	0.010	0.101	
Copper	7440-50-8	0.001	mg/L	0.019	0.003	0.005	0.005	0.009	
Nickel	7440-02-0	0.001	mg/L	0.026	0.018	0.028	0.086	0.080	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Lead	7439-92-1	0.001	mg/L	0.009	0.003	0.014	0.008	0.012	
Zinc	7440-66-6	0.005	mg/L	0.056	0.039	0.030	0.382	0.059	
Manganese	7439-96-5	0.001	mg/L	0.124	0.270	0.215	0.013	0.049	
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	1.1	1.8	0.5	0.3	<0.1	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	9.72	3.33	0.73	0.06	12.2	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	9.65	3.32	0.72	0.06	2.40	
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	0.25	<0.01	0.14	1.56	0.04	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.26	<0.01	0.15	1.57	0.04	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.09	0.17	<0.01	<0.01	0.08	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	9.66	10.9	68.1	3.00	22.3	
Total Cations	----	0.01	meq/L	7.95	9.42	61.7	2.74	18.4	
Ionic Balance	----	0.01	%	9.71	7.22	4.94	4.48	9.42	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	28	33	6	4	95	
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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time					11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	1	µg/L	<1	<1	----	----	<1	
Isopropylbenzene	98-82-8	1	µg/L	<1	<1	----	----	<1	
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	<1	<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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1-Dichloroethane	75-34-3	1	µg/L	<1	<1	----	----	4	
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	<1	----	----	<1	
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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	<5	
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	<0.6	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.6	<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	110	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	740	520	<100	<100	200	
C29 - C36 Fraction	----	50	µg/L	60	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	910	520	<50	<50	200	
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	230	150	<100	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	680	460	<100	<100	200	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	910	610	<100	<100	200	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17		
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00			
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015			
				Result	Result	Result	Result	Result			
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued											
^ >C10 - C16 Fraction minus Naphthalene (F2)				----	100	µg/L	230	150	<100	<100	<100
EP080: BTEXN											
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		
EP231A: Perfluoroalkyl Sulfonic Acids											
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	<0.02	----	----	----	----		
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	<0.02	----	----	----	----		
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	<0.02	----	----	----	----		
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	----	----	----	----		
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	<0.01	----	----	----	----		
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	----	----	----	----		
EP231B: Perfluoroalkyl Carboxylic Acids											
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	----	----	----	----		
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	<0.02	----	----	----	----		
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	<0.02	----	----	----	----		
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	<0.02	----	----	----	----		
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	<0.01	----	----	----	----		
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	----	----	----	----		
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	----	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	----	----	----	----		



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	----	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	<0.02	----	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	----	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	----	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	----	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	----	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	----	<0.05	----	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	----	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	----	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	----	----	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	----	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	----	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	----	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	----	----	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	<0.01	----	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	<0.01	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EP231P: PFAS Sums - Continued									
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	<0.01	----	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	88.2	90.2	----	----	89.6	
Toluene-D8	2037-26-5	1	%	70.4	85.6	----	----	83.8	
4-Bromofluorobenzene	460-00-4	1	%	85.4	76.0	----	----	86.5	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	32.8	27.2	16.9	26.0	37.6	
2-Chlorophenol-D4	93951-73-6	1	%	75.6	68.5	34.0	63.2	87.6	
2,4,6-Tribromophenol	118-79-6	1	%	82.2	76.2	41.5	69.2	80.9	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	73.4	76.8	36.3	65.7	94.9	
Anthracene-d10	1719-06-8	1	%	78.8	72.2	53.5	95.0	97.6	
4-Terphenyl-d14	1718-51-0	1	%	73.5	90.9	51.7	105	98.3	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	81.9	83.6	88.4	75.1	83.6	
Toluene-D8	2037-26-5	2	%	70.4	87.7	79.2	72.0	85.6	
4-Bromofluorobenzene	460-00-4	2	%	74.7	79.9	87.4	73.8	90.7	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	111	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.42	6.41	7.28	6.91	6.51	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2170	3690	1100	2470	2420	
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	648	343	143	295	294	
Total Alkalinity as CaCO3	----	1	mg/L	648	343	143	295	294	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	83	232	84	446	497	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	113	454	169	----	620	
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	699	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	46	1070	20	121	99	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	55	98	64	86	82	
Magnesium	7439-95-4	1	mg/L	40	63	7	45	36	
Sodium	7440-23-5	1	mg/L	159	621	15	183	181	
Potassium	7440-09-7	1	mg/L	12	24	6	7	10	
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.039	0.006	0.004	0.007	0.017	
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	0.007	0.002	0.001	0.003	0.006	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.202	0.073	0.029	0.057	0.115	
Nickel	7440-02-0	0.001	mg/L	0.047	0.009	0.005	0.033	0.044	
Zinc	7440-66-6	0.005	mg/L	0.012	0.014	0.010	0.010	0.030	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.044	0.020	0.032	0.022	0.032	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	0.0001	0.0002	
Chromium	7440-47-3	0.001	mg/L	0.011	0.040	0.064	0.054	0.038	
Copper	7440-50-8	0.001	mg/L	0.004	0.011	0.017	0.011	0.010	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Nickel	7440-02-0	0.001	mg/L	0.055	0.024	0.036	0.062	0.063	
Lead	7439-92-1	0.001	mg/L	0.004	0.011	0.027	0.015	0.009	
Zinc	7440-66-6	0.005	mg/L	0.029	0.049	2.26	0.054	0.299	
Manganese	7439-96-5	0.001	mg/L	0.216	0.110	0.112	0.094	0.137	
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.8	0.5	0.2	0.1	0.2	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	7.82	0.38	0.12	0.71	0.65	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	7.82	0.38	0.12	0.71	0.65	
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	0.02	0.49	5.49	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.02	0.02	0.50	5.49	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.44	0.02	<0.01	<0.01	<0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	16.0	41.9	5.17	18.6	19.0	
Total Cations	----	0.01	meq/L	13.2	37.7	4.58	16.1	15.2	
Ionic Balance	----	0.01	%	9.28	5.24	6.10	7.08	11.2	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	35	15	15	33	43	
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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time					11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
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	----	
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	----	----	<10	<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	----	----	<1	<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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time					11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	----	
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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EP074G: Trihalomethanes - Continued									
Bromoform	75-25-2	1	µg/L	----	----	<1	<1	----	
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L	----	----	<5	<5	----	
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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>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									
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	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	0.08	0.04	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	<0.01	0.02	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	<0.02	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	<0.1	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	<0.01	<0.01	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	<0.02	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	<0.05	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	<0.02	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	<0.02	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	<0.02	----	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	<0.05	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	<0.05	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	<0.05	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	<0.05	----	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	0.08	0.06	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EP231P: PFAS Sums - Continued									
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	0.08	0.06	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	0.08	0.06	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	----	----	90.0	86.6	----	
Toluene-D8	2037-26-5	1	%	----	----	84.4	78.6	----	
4-Bromofluorobenzene	460-00-4	1	%	----	----	90.7	83.3	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	32.3	32.9	32.9	30.6	37.6	
2-Chlorophenol-D4	93951-73-6	1	%	80.7	87.0	87.5	78.5	87.9	
2,4,6-Tribromophenol	118-79-6	1	%	89.6	66.6	62.0	61.8	68.9	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	79.0	94.7	91.9	90.5	88.7	
Anthracene-d10	1719-06-8	1	%	106	93.7	112	98.5	77.3	
4-Terphenyl-d14	1718-51-0	1	%	93.1	109	112	92.2	98.0	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	94.9	90.1	83.6	82.2	82.5	
Toluene-D8	2037-26-5	2	%	89.4	75.8	85.8	82.1	72.2	
4-Bromofluorobenzene	460-00-4	2	%	90.9	86.2	95.9	89.3	83.6	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	107	118	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC101_11/5/17	QC103_11/5/17	QC104_11/5/17	QC105_11/5/17	QC13
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-023	EM1705994-024	EM1705994-025	EM1705994-026	EM1705994-027	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.93	----	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2450	----	----	----	----	----
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	294	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	294	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	452	----	----	----	----	----
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	697	----	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	114	----	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	90	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	47	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	194	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	7	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.008	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	0.003	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.050	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.033	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.010	----	----	----	----	----
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	----	<0.01	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.024	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	0.055	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	0.011	<0.001	<0.001	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC101_11/5/17	QC103_11/5/17	QC104_11/5/17	QC105_11/5/17	QC13
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-023	EM1705994-024	EM1705994-025	EM1705994-026	EM1705994-027	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Nickel	7440-02-0	0.001	mg/L	0.062	<0.001	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	0.015	<0.001	<0.001	----	----	
Zinc	7440-66-6	0.005	mg/L	0.054	<0.005	<0.005	----	----	
Manganese	7439-96-5	0.001	mg/L	0.097	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	----	<0.01	<0.01	----	----	
Iron	7439-89-6	0.05	mg/L	----	<0.05	<0.05	----	----	
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	<0.0001	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.1	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.72	----	----	----	----	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.72	----	----	----	----	
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	0.50	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.51	----	----	----	----	
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	18.5	----	----	----	----	
Total Cations	----	0.01	meq/L	17.0	----	----	----	----	
Ionic Balance	----	0.01	%	4.30	----	----	----	----	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	31	----	----	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	
Toluene	108-88-3	1	µg/L	<1	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC101_11/5/17	QC103_11/5/17	QC104_11/5/17	QC105_11/5/17	QC13
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-023	EM1705994-024	EM1705994-025	EM1705994-026	EM1705994-027	
				Result	Result	Result	Result	Result	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
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	----	----	----	----	
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	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC101_11/5/17	QC103_11/5/17	QC104_11/5/17	QC105_11/5/17	QC13
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-023	EM1705994-024	EM1705994-025	EM1705994-026	EM1705994-027	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	----	----	----	----	
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	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC101_11/5/17	QC103_11/5/17	QC104_11/5/17	QC105_11/5/17	QC13
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-023	EM1705994-024	EM1705994-025	EM1705994-026	EM1705994-027	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
EP080: BTEXN									
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	%	90.0	----	----	----	----	
Toluene-D8	2037-26-5	1	%	81.4	----	----	----	----	
4-Bromofluorobenzene	460-00-4	1	%	86.2	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	36.0	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	1	%	86.7	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	1	%	60.0	----	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	83.5	----	----	----	----	
Anthracene-d10	1719-06-8	1	%	98.6	----	----	----	----	
4-Terphenyl-d14	1718-51-0	1	%	104	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	82.8	78.6	92.4	84.0	92.2	
Toluene-D8	2037-26-5	2	%	82.9	80.8	83.7	70.9	78.3	
4-Bromofluorobenzene	460-00-4	2	%	91.2	86.8	89.2	76.5	89.7	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC14	QC15	QC12	----	----
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1705994-028	EM1705994-029	EM1705994-030	-----	-----	
				Result	Result	Result	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
[^] C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
[^] Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	----	----	
[^] Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	95.6	93.3	101	----	----	
Toluene-D8	2037-26-5	2	%	91.2	89.7	99.9	----	----	
4-Bromofluorobenzene	460-00-4	2	%	96.9	94.5	101	----	----	



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
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	130

QUALITY CONTROL REPORT

Work Order	: EM1705994	Page	: 1 of 22
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 12-May-2017
Order number	: 60537182 3.5	Date Analysis Commenced	: 12-May-2017
C-O-C number	: ----	Issue Date	: 22-May-2017
Sampler	: JM, MW		
Site	: Fishermans Bend		
Quote number	: ME/199/16		
No. of samples received	: 30		
No. of samples analysed	: 23		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Herman Lin	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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: 887296)									
EM1705988-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.80	6.77	0.442	0% - 20%
EM1705990-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.94	5.94	0.00	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 887298)									
EM1705994-009	GMW03_11/5/17	EA005-P: pH Value	----	0.01	pH Unit	7.54	7.57	0.397	0% - 20%
EM1705994-023	QC101_11/5/17	EA005-P: pH Value	----	0.01	pH Unit	6.93	7.02	1.29	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 886948)									
EM1705990-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6360	6380	0.267	0% - 20%
EM1705994-014	GMW83_11/5/17	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	851	824	3.22	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 887297)									
EM1705988-004	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	119	119	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	119	119	0.00	0% - 20%
EM1705990-005	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	37	37	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	37	37	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 887299)									
EM1705994-009	GMW03_11/5/17	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	408	410	0.264	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	408	410	0.264	0% - 20%
EM1705994-023	QC101_11/5/17	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



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: 887299) - continued									
EM1705994-023	QC101_11/5/17	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	294	295	0.415	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	294	295	0.415	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 887014)									
EM1705844-006	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	7800	7880	1.01	0% - 20%
EM1705994-015	MW9AI_11/5/17	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	121	120	0.865	0% - 20%
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 893328)									
EM1705994-001	GW77_10/5/17	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	170	190	10.8	0% - 50%
EM1705994-015	MW9AI_11/5/17	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	248	241	2.78	0% - 20%
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 900294)									
EM1705994-021	GW48_11/5/17	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	699	663	5.32	0% - 20%
EM1706144-001	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	74	84	12.1	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 887013)									
EM1705844-006	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	28800	32700	12.4	0% - 20%
EM1705994-015	MW9AI_11/5/17	ED045G: Chloride	16887-00-6	1	mg/L	347	340	1.92	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 887217)									
EM1705994-001	GW77_10/5/17	ED093F: Calcium	7440-70-2	1	mg/L	81	82	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	15	15	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	22	21	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	5	5	0.00	No Limit
EM1705994-014	GMW83_11/5/17	ED093F: Calcium	7440-70-2	1	mg/L	26	26	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	6	6	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	19	19	0.00	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	5	5	0.00	No Limit
ED093F: Dissolved Major Cations (QC Lot: 887247)									
EM1705858-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	238	241	1.05	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	78	78	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	363	366	0.690	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	24	24	0.00	0% - 20%
EM1705953-007	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	151	152	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	11	11	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	18	18	0.00	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 887218)									
EM1705973-001	Anonymous	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	<0.001	<0.001	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	0.034	0.033	4.17	0% - 20%
		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	0.240	0.235	1.84	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 (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 887218) - continued									
EM1705973-001	Anonymous	EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.049	0.048	2.30	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.059	0.055	6.16	0% - 50%
EM1705994-014	GMW83_11/5/17	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	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	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	0.007	0.007	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.074	0.074	0.00	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.281	0.280	0.433	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 887249)									
EM1705979-001	Anonymous	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	<0.001	<0.001	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	0.020	0.020	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.011	0.010	13.9	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 887234)									
EM1705980-015	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	0.002	0.002	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.110	0.097	13.0	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.15	0.15	0.00	0% - 50%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.35	0.31	11.9	No Limit
EM1705858-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0008	0.0011	37.6	0% - 50%
		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	0.002	0.002	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.271	0.270	0.00	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.036	0.038	2.93	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.127	0.132	3.49	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	2.12	2.10	0.962	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 (%)
EG020T: Total Metals by ICP-MS (QC Lot: 887234) - continued									
EM1705858-001	Anonymous	EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.30	0.29	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 887237)									
EM1705994-010	DAMW5_02_11/5/17	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0004	0.0004	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.004	0.004	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	0.003	0.003	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.270	0.275	1.87	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.018	0.019	0.00	0% - 50%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.039	0.036	5.90	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.47	0.54	14.9	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1705994-023	QC101_11/5/17	EG020A-T: Iron	7439-89-6	0.05	mg/L	6.35	6.57	3.43	0% - 20%
		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	0.024	0.023	0.00	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.055	0.057	4.19	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.011	0.011	0.00	0% - 50%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.015	0.015	0.00	0% - 50%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.097	0.095	1.55	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.062	0.061	1.66	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.054	0.051	7.02	0% - 50%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	16.9	17.9	5.42	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	24.1	23.8	1.49	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 887219)									
EM1705994-015	MW9AI_11/5/17	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1705994-001	GW77_10/5/17	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 887250)									
EM1705986-006	Anonymous	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: 893071)									
EM1705964-010	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0002	0.00	No Limit
EM1705994-014	GMW83_11/5/17	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 887292)									
EM1705985-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1705965-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.1	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 887300)									
EM1705994-009	GMW03_11/5/17	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.1	1.1	0.00	0% - 50%
EM1705994-023	QC101_11/5/17	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	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 (%)	
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 887132)										
EM1705994-001	GW77_10/5/17	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.18	0.19	0.00	0% - 50%	
EM1705994-015	MW9AI_11/5/17	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	12.2	12.2	0.186	0% - 20%	
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 887015)										
EM1705994-001	GW77_10/5/17	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EM1705994-015	MW9AI_11/5/17	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 887133)										
EM1705994-001	GW77_10/5/17	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EM1705994-015	MW9AI_11/5/17	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.04	0.04	0.00	No Limit	
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 887016)										
EM1705994-001	GW77_10/5/17	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EM1705994-015	MW9AI_11/5/17	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.08	0.06	16.4	No Limit	
EP005: Total Organic Carbon (TOC) (QC Lot: 897710)										
EM1705989-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	2	2	0.00	No Limit	
EM1705989-004	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.00	No Limit	
EP005: Total Organic Carbon (TOC) (QC Lot: 897711)										
EM1705994-016	MW1371_02_11/5/17	EP005: Total Organic Carbon	----	1	mg/L	35	35	0.00	0% - 20%	
EM1706071-004	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	4	5	0.00	No Limit	
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 886761)										
EM1705994-001	GW77_10/5/17	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			
EP074B: Oxygenated Compounds (QC Lot: 886761)										
EM1705994-001	GW77_10/5/17	EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	220	260	16.8	0% - 20%	
		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	



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 (%)
EP074C: Sulfonated Compounds (QC Lot: 886761)									
EM1705994-001	GW77_10/5/17	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	<1	0.00	No Limit
EP074D: Fumigants (QC Lot: 886761)									
EM1705994-001	GW77_10/5/17	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: 886761)									
EM1705994-001	GW77_10/5/17	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: 1,1,1,2,2-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: 886761)									
EM1705994-001	GW77_10/5/17	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



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: 886761) - continued										
EM1705994-001	GW77_10/5/17	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: 886761)										
EM1705994-001	GW77_10/5/17	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: 886761)										
EM1705994-001	GW77_10/5/17	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 886760)										
EM1705994-016	MW1371_02_11/5/17	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EM1705994-001	GW77_10/5/17	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 886762)										
EM1705980-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EM1705980-012	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 886760)										
EM1705994-016	MW1371_02_11/5/17	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EM1705994-001	GW77_10/5/17	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: 886762)										
EM1705980-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EM1705980-012	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EP080: BTEXN (QC Lot: 886760)										
EM1705994-016	MW1371_02_11/5/17	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	
EM1705994-001	GW77_10/5/17	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
		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: Benzene	71-43-2	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 (%)	
EP080: BTEXN (QC Lot: 886760) - continued										
EM1705994-001	GW77_10/5/17	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: 886762)										
EM1705980-001	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	2	µg/L	<2	<2	0.00	No Limit	
			106-42-3							
			95-47-6							
EM1705980-012	Anonymous	EP080: ortho-Xylene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
		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							
	95-47-6									
	91-20-3									
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 886131)										
EM1705888-001	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit	
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
EM1705888-003	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit	
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 886131)										
EM1705888-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit	
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit	
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	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 (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 886131) - continued									
EM1705888-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EM1705888-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 886131)									
EM1705888-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EM1705888-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 886131)									



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 (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 886131) - continued									
EM1705888-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EM1705888-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 886131)									
EM1705888-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EM1705888-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	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: 886948)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.5	96	106	
				<10	293 mg/L	101	96	106	
ED037P: Alkalinity by PC Titrator (QCLot: 887297)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	96.1	90	110	
ED037P: Alkalinity by PC Titrator (QCLot: 887299)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	96.0	90	110	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 887014)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	107	92	115	
				<1	100 mg/L	103	92	115	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 893328)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<10	500 mg/L	115	85	118	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<1	500 mg/L	98.0	85	118	
ED045G: Chloride by Discrete Analyser (QCLot: 887013)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	107	89	117	
				<1	1000 mg/L	104	92	112	
ED093F: Dissolved Major Cations (QCLot: 887217)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	100	92	108	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	97.8	92	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	99.4	89	107	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	98.8	89	107	
ED093F: Dissolved Major Cations (QCLot: 887247)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	97.3	92	108	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	96.6	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	97.3	89	107	
EG020F: Dissolved Metals by ICP-MS (QCLot: 887218)									
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.0	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.8	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.5	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.8	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.5	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	97.5	87	109	



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	
EG020F: Dissolved Metals by ICP-MS (QCLot: 887218) - continued									
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.5	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.3	87	107	
EG020F: Dissolved Metals by ICP-MS (QCLot: 887249)									
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	95.7	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.4	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.5	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.0	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.5	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	92.7	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.5	87	107	
EG020T: Total Metals by ICP-MS (QCLot: 887234)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	106	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	104	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.5	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.2	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.9	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.1	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.6	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.1	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.5	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.9	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	99	110	
EG020T: Total Metals by ICP-MS (QCLot: 887237)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	108	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.9	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	100	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.4	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.8	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	102	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.5	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	97.9	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.8	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	109	99	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 887219)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.6	88	117	
EG035F: Dissolved Mercury by FIMS (QCLot: 887250)									



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	
EG035F: Dissolved Mercury by FIMS (QCLot: 887250) - continued								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	91.8	88	117
EG035T: Total Recoverable Mercury by FIMS (QCLot: 893071)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	106	87	113
EK040P: Fluoride by PC Titrator (QCLot: 887292)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	111	85	112
EK040P: Fluoride by PC Titrator (QCLot: 887300)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	109	85	112
EK055G: Ammonia as N by Discrete Analyser (QCLot: 887132)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	100	80	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 887015)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	103	94	107
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 887133)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	89	114
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 887016)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	104	94	108
EP005: Total Organic Carbon (TOC) (QCLot: 897710)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	92.6	81	109
EP005: Total Organic Carbon (TOC) (QCLot: 897711)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	93.6	81	109
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 886761)								
EP074-WF: Benzene	71-43-2	1	µg/L	<1	20 µg/L	98.5	81	119
EP074-WF: Toluene	108-88-3	1	µg/L	<1	20 µg/L	97.4	84	117
EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	20 µg/L	106	83	114
EP074-WF: meta- & para-Xylene	108-38-3	1	µg/L	<1	40 µg/L	97.2	81	116
	106-42-3							
EP074-WF: Styrene	100-42-5	1	µg/L	<1	20 µg/L	95.2	82	118
EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	20 µg/L	97.2	85	115
EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	20 µg/L	95.2	81	113
EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	20 µg/L	94.6	76	111
EP074-WF: 1,3,5-Trimethylbenzene	108-67-8	1	µg/L	<1	20 µg/L	94.4	79	109
EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	20 µg/L	93.3	77	111
EP074-WF: 1,2,4-Trimethylbenzene	95-63-6	1	µg/L	<1	20 µg/L	94.9	79	108
EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	20 µg/L	95.2	80	110
EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	20 µg/L	95.4	75	111
EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	20 µg/L	94.3	68	111
EP074B: Oxygenated Compounds (QCLot: 886761)								
EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	200 µg/L	128	69	147



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: 886761) - continued									
EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	200 µg/L	101	77	124	
EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	200 µg/L	109	71	131	
EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	200 µg/L	94.6	73	128	
EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	200 µg/L	101	75	129	
EP074C: Sulfonated Compounds (QCLot: 886761)									
EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	20 µg/L	87.7	64	119	
EP074D: Fumigants (QCLot: 886761)									
EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	20 µg/L	102	74	117	
EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	20 µg/L	96.9	83	118	
EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	20 µg/L	83.6	74	109	
EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	20 µg/L	80.6	70	109	
EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	20 µg/L	# 119	81	116	
EP074E: Halogenated Aliphatic Compounds (QCLot: 886761)									
EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	200 µg/L	96.1	61	137	
EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	200 µg/L	102	66	137	
EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	200 µg/L	101	67	135	
EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	200 µg/L	99.2	52	128	
EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	200 µg/L	101	76	125	
EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	200 µg/L	106	74	123	
EP074-WF: 1,1-Dichloroethene	75-35-4	1	µg/L	<1	20 µg/L	99.7	75	120	
EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	20 µg/L	75.5	37	120	
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	20 µg/L	114	72	159	
EP074-WF: trans-1,2-Dichloroethene	156-60-5	1	µg/L	<1	20 µg/L	96.6	78	117	
EP074-WF: 1,1-Dichloroethane	75-34-3	1	µg/L	<1	20 µg/L	101	81	118	
EP074-WF: cis-1,2-Dichloroethene	156-59-2	1	µg/L	<1	20 µg/L	105	83	118	
EP074-WF: 1,1,1-Trichloroethane	71-55-6	1	µg/L	<1	20 µg/L	92.1	76	115	
EP074-WF: 1,1-Dichloropropylene	563-58-6	1	µg/L	<1	20 µg/L	95.9	75	117	
EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	20 µg/L	86.2	72	111	
EP074-WF: 1,2-Dichloroethane	107-06-2	1	µg/L	<1	20 µg/L	97.4	81	120	
EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	20 µg/L	96.6	78	116	
EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	20 µg/L	92.0	79	116	
EP074-WF: 1,1,2-Trichloroethane	79-00-5	1	µg/L	<1	20 µg/L	96.5	85	119	
EP074-WF: 1,3-Dichloropropane	142-28-9	1	µg/L	<1	20 µg/L	100	85	119	
EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	20 µg/L	105	76	120	
EP074-WF: 1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L	<1	20 µg/L	95.7	78	110	
EP074-WF: trans-1,4-Dichloro-2-butene	110-57-6	1	µg/L	<1	20 µg/L	86.0	64	118	
EP074-WF: cis-1,4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	20 µg/L	106	51	113	
EP074-WF: 1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L	<1	20 µg/L	98.0	85	121	



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	
EP074E: Halogenated Aliphatic Compounds (QCLot: 886761) - continued									
EP074-WF: 1,2,3-Trichloropropane	96-18-4	1	µg/L	<1	20 µg/L	97.6	84	118	
EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	20 µg/L	81.4	64	109	
EP074-WF: 1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	20 µg/L	83.0	65	115	
EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	20 µg/L	103	70	121	
EP074F: Halogenated Aromatic Compounds (QCLot: 886761)									
EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	20 µg/L	108	85	115	
EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	20 µg/L	86.8	82	116	
EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	20 µg/L	96.8	81	112	
EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	20 µg/L	95.4	80	110	
EP074-WF: 1,3-Dichlorobenzene	541-73-1	1	µg/L	<1	20 µg/L	95.5	80	110	
EP074-WF: 1,4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	20 µg/L	96.7	80	112	
EP074-WF: 1,2-Dichlorobenzene	95-50-1	1	µg/L	<1	20 µg/L	97.8	84	111	
EP074-WF: 1,2,4-Trichlorobenzene	120-82-1	1	µg/L	<1	20 µg/L	99.6	70	114	
EP074-WF: 1,2,3-Trichlorobenzene	87-61-6	1	µg/L	<1	20 µg/L	102	78	116	
EP074G: Trihalomethanes (QCLot: 886761)									
EP074-WF: Chloroform	67-66-3	1	µg/L	<1	20 µg/L	110	82	118	
EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	20 µg/L	86.2	75	112	
EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	20 µg/L	84.0	73	108	
EP074-WF: Bromoform	75-25-2	1	µg/L	<1	20 µg/L	81.2	68	107	
EP074H: Naphthalene (QCLot: 886761)									
EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	100	80	116	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 886962)									
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	79.8	39	110	
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	97.4	40	124	
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	82.8	47	117	
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	83.4	51	118	
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	85.7	53	119	
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	97.6	51	113	
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	89.2	59	123	
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	83.0	58	123	
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	92.5	52	126	
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	81.0	55	123	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	65.9	52	131	
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	69.3	57	126	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	71.8	56	126	
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	77.3	53	123	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	84.6	53	125	



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: 886962) - continued									
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	76.2	53	125	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 886760)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	71.4	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 886762)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	109	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 886963)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	104	53	123	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	104	57	133	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	97.2	55	141	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 886760)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	68.4	65	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 886762)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	109	65	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 886963)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	102	54	122	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	103	56	132	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	103	51	137	
EP080: BTEXN (QCLot: 886760)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	77.1	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	78.2	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	73.8	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	76.4	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	82.2	78	128	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	79.9	71	129	
EP080: BTEXN (QCLot: 886762)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	107	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	108	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	109	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	111	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	113	78	128	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	103	71	129	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 886131)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	111	70	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	80.8	70	130	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	102	70	130	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 886131) - continued								
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	109	70	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	95.6	70	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	102	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 886131)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	97.6	70	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	91.2	70	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	80.6	70	130
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	85.0	70	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	98.4	70	130
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	89.0	70	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	83.4	70	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	88.8	70	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	82.4	70	130
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	82.8	70	130
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	90.4	70	124
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 886131)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	102	70	130
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	101	70	130
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	89.2	70	129
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	1.25 µg/L	97.8	70	129
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	94.8	70	126
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	96.6	70	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	85.6	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 886131)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	85.4	70	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	106	70	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	89.4	70	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	97.2	70	130

Matrix Spike (MS) Report

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

Sub-Matrix: WATER

Matrix Spike (MS) Report		
Spike	SpikeRecovery(%)	Recovery Limits (%)



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
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 887014)							
EM1705994-001	GW77_10/5/17	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 893328)							
EM1705994-002	GW74_10/5/17	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	113	70	130
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)							
EM1705994-023	QC101_11/5/17	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	120	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 887013)							
EM1705994-001	GW77_10/5/17	ED045G: Chloride	16887-00-6	400 mg/L	104	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 887218)							
EM1705973-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	98.4	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	98.0	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	96.4	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	95.8	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	91.7	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	98.0	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	97.6	75	131
EG020F: Dissolved Metals by ICP-MS (QCLot: 887249)							
EM1705979-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	102	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	100	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	96.9	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	94.1	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	92.9	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	95.4	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	98.0	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	98.8	75	131
EG020T: Total Metals by ICP-MS (QCLot: 887234)							
EM1705857-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	98.7	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	97.1	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	93.7	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	93.6	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	99.7	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	93.8	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	95.0	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	95.5	74	116
EG020T: Total Metals by ICP-MS (QCLot: 887237)							
EM1705994-010	DAMW5_02_11/5/17	EG020A-T: Arsenic	7440-38-2	1 mg/L	91.7	82	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: 887237) - continued							
EM1705994-010	DAMW5_02_11/5/17	EG020A-T: Cadmium	7440-43-9	0.25 mg/L	93.4	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	89.5	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	88.2	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	95.2	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	90.3	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	89.4	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	90.5	74	116
EG035F: Dissolved Mercury by FIMS (QCLot: 887219)							
EM1705994-002	GW74_10/5/17	EG035F: Mercury	7439-97-6	0.01 mg/L	91.7	70	120
EG035F: Dissolved Mercury by FIMS (QCLot: 887250)							
EM1705994-023	QC101_11/5/17	EG035F: Mercury	7439-97-6	0.01 mg/L	94.8	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 893071)							
EM1705994-001	GW77_10/5/17	EG035T: Mercury	7439-97-6	0.01 mg/L	87.9	70	130
EK040P: Fluoride by PC Titrator (QCLot: 887292)							
EM1705965-002	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	130	70	130
EK040P: Fluoride by PC Titrator (QCLot: 887300)							
EM1705994-010	DAMW5_02_11/5/17	EK040P: Fluoride	16984-48-8	5 mg/L	124	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 887132)							
EM1705994-001	GW77_10/5/17	EK055G: Ammonia as N	7664-41-7	1 mg/L	98.5	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 887015)							
EM1705994-002	GW74_10/5/17	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	89.5	80	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 887133)							
EM1705994-002	GW74_10/5/17	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	97.9	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 887016)							
EM1705994-002	GW74_10/5/17	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	97.0	79	123
EP005: Total Organic Carbon (TOC) (QCLot: 897710)							
EM1705989-002	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	91.4	80	114
EP005: Total Organic Carbon (TOC) (QCLot: 897711)							
EM1705994-019	GW51_11/5/17	EP005: Total Organic Carbon	----	100 mg/L	91.6	80	114
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 886761)							
EM1705994-008	GW73_11/5/17	EP074-WF: Benzene	71-43-2	20 µg/L	102	76	128
		EP074-WF: Toluene	108-88-3	20 µg/L	106	72	132
EP074E: Halogenated Aliphatic Compounds (QCLot: 886761)							
EM1705994-008	GW73_11/5/17	EP074-WF: 1,1-Dichloroethene	75-35-4	20 µg/L	105	63	129



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
EP074E: Halogenated Aliphatic Compounds (QCLot: 886761) - continued							
EM1705994-008	GW73_11/5/17	EP074-WF: Trichloroethene	79-01-6	20 µg/L	93.7	64	126
EP074F: Halogenated Aromatic Compounds (QCLot: 886761)							
EM1705994-008	GW73_11/5/17	EP074-WF: Chlorobenzene	108-90-7	20 µg/L	112	81	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 886760)							
EM1705994-008	GW73_11/5/17	EP080: C6 - C9 Fraction	----	280 µg/L	86.3	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 886762)							
EM1705980-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	57.1	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 886760)							
EM1705994-008	GW73_11/5/17	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	82.3	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 886762)							
EM1705980-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	61.2	44	122
EP080: BTEXN (QCLot: 886760)							
EM1705994-008	GW73_11/5/17	EP080: Benzene	71-43-2	20 µg/L	98.4	68	130
		EP080: Toluene	108-88-3	20 µg/L	99.7	72	132
EP080: BTEXN (QCLot: 886762)							
EM1705980-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	78.2	68	130
		EP080: Toluene	108-88-3	20 µg/L	77.5	72	132
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 886131)							
EM1705888-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	113	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	76.2	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	94.4	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	86.8	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	97.6	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	85.0	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 886131)							
EM1705888-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	70.0	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	97.8	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	67.0	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	84.4	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	92.8	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	79.6	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	75.2	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	86.0	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	78.2	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.5 µg/L	93.4	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	85.9	50	130



Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
				Low	High		
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 886131)							
EM1705888-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	81.0	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	66.9	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	79.5	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	1.25 µg/L	81.6	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	118	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	91.2	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	92.8	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 886131)							
EM1705888-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	66.0	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	96.0	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	80.6	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	78.2	50	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1705994	Page	: 1 of 19
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 12-May-2017
Site	: Fishermans Bend	Issue Date	: 22-May-2017
Sampler	: JM, MW	No. of samples received	: 30
Order number	: 60537182 3.5	No. of samples analysed	: 23

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.
- Laboratory Control outliers exist - please see following pages for full details.
- 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
Laboratory Control Spike (LCS) Recoveries							
EP074D: Fumigants	QC-886761-001	----	1,2-Dibromoethane (EDB)	106-93-4	119 %	81-116%	Recovery greater than upper control limit
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EM1705994--001	GW77_10/5/17	Sulfate as SO4 - Turbidimetric	14808-79-8	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							
GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	----	----	----	15-May-2017	10-May-2017	5
Clear Plastic Bottle - Natural							
GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	----	----	----	15-May-2017	11-May-2017	4
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
GW62_11/5/17		----	----	----	15-May-2017	13-May-2017	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	18	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	18	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	20	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) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	10-May-2017	*
Clear Plastic Bottle - Natural (EA005-P) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	15-May-2017	11-May-2017	*
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	17-May-2017	✓
Clear Plastic Bottle - Natural (EA015H) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	15-May-2017	18-May-2017	✓
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	24-May-2017	✓
Clear Plastic Bottle - Natural (ED037-P) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	15-May-2017	25-May-2017	✓



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) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	16-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Natural (ED041G) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	16-May-2017	08-Jun-2017	✓
ED043: Total Oxidised Sulfur as SO4 2-								
Clear Plastic Bottle - Natural (ED043) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	18-May-2017	07-Jun-2017	✓	18-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Natural (ED043) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	18-May-2017	08-Jun-2017	✓	18-May-2017	08-Jun-2017	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	16-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Natural (ED045G) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	16-May-2017	08-Jun-2017	✓



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 - Natural (ED093F) MW9AI_11/5/17	11-May-2017	----	----	----	16-May-2017	18-May-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW77_10/5/17, GW76_10/5/17, GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	16-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, GMW03_11/5/17, GW62_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17	11-May-2017	----	----	----	16-May-2017	08-Jun-2017	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Natural (EG020A-F) MW9AI_11/5/17	11-May-2017	----	----	----	15-May-2017	07-Nov-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW77_10/5/17, GW76_10/5/17, GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	06-Nov-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, GMW03_11/5/17, GW62_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17	11-May-2017	----	----	----	15-May-2017	07-Nov-2017	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) GW77_10/5/17, GW76_10/5/17, GW74_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	06-Nov-2017	✓	15-May-2017	06-Nov-2017	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17, GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17	11-May-2017	15-May-2017	07-Nov-2017	✓	15-May-2017	07-Nov-2017	✓



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 - Natural (EG035F) MW9AI_11/5/17	11-May-2017	----	----	----	16-May-2017	08-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW77_10/5/17, GW76_10/5/17, GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	16-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, GMW03_11/5/17, GW62_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17	11-May-2017	----	----	----	16-May-2017	08-Jun-2017	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) GW77_10/5/17, GW76_10/5/17, GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	17-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17, GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17	11-May-2017	----	----	----	17-May-2017	08-Jun-2017	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P) GW77_10/5/17, GW76_10/5/17, GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Natural (EK040P) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	15-May-2017	08-Jun-2017	✓



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) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	15-May-2017	08-Jun-2017	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	12-May-2017	12-May-2017	✓
Clear Plastic Bottle - Natural (EK057G) GW73_11/5/17, DAMW5_02_11/5/17	GMW03_11/5/17,	11-May-2017	----	----	----	12-May-2017	13-May-2017	✓
Clear Plastic Bottle - Natural (EK057G) GW62_11/5/17		11-May-2017	----	----	----	15-May-2017	13-May-2017	*
Clear Plastic Bottle - Natural (EK057G) GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	12-May-2017	13-May-2017	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	15-May-2017	08-Jun-2017	✓



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) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	12-May-2017	12-May-2017	✓
Clear Plastic Bottle - Natural (EK071G) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	12-May-2017	13-May-2017	✓
EP005: Total Organic Carbon (TOC)								
Amber TOC Vial - Sulfuric Acid (EP005) GW73_11/5/17,	GW62_11/5/17	11-May-2017	----	----	----	19-May-2017	08-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP005) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	19-May-2017	07-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP005) GMW03_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	DAMW5_02_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	19-May-2017	08-Jun-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17		10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17,	11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17		10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17,	11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓



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
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17, 11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17, 11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17, 11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17, 11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17, 11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓



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
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, GMW03_11/5/17, DAMW5_02_11/5/17, MW9AI_11/5/17, GW41_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) GW77_10/5/17, GW74_10/5/17, GW76_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	17-May-2017	✓	16-May-2017	24-Jun-2017	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) GW73_11/5/17, GMW03_11/5/17, DAMW5_02_11/5/17, GW62_11/5/17, GMW83_11/5/17, MW9AI_11/5/17, MW1371_02_11/5/17, GW51_11/5/17, GW41_11/5/17, GW48_11/5/17, GW53_11/5/17, QC101_11/5/17	11-May-2017	15-May-2017	18-May-2017	✓	16-May-2017	24-Jun-2017	✓



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) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	17-May-2017	✓	16-May-2017	24-Jun-2017	✓
Amber Glass Bottle - Unpreserved (EP071) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17	11-May-2017	15-May-2017	18-May-2017	✓	16-May-2017	24-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC14, QC12	QC15,	11-May-2017	15-May-2017	25-May-2017	✓	15-May-2017	25-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17, QC105_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17, QC13	11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓



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 Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	17-May-2017	✓	16-May-2017	24-Jun-2017	✓
Amber Glass Bottle - Unpreserved (EP071) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17	11-May-2017	15-May-2017	18-May-2017	✓	16-May-2017	24-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC14, QC12	QC15,	11-May-2017	15-May-2017	25-May-2017	✓	15-May-2017	25-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17, QC105_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17, QC13	11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC14, QC12	QC15,	11-May-2017	15-May-2017	25-May-2017	✓	15-May-2017	25-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17, QC105_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17, QC13	11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓



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	
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW73_11/5/17, GW51_11/5/17,	DAMW5_02_11/5/17, GW41_11/5/17	11-May-2017	----	----	----	14-May-2017	07-Nov-2017	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) GW73_11/5/17, GW51_11/5/17,	DAMW5_02_11/5/17, GW41_11/5/17	11-May-2017	----	----	----	14-May-2017	07-Nov-2017	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) GW73_11/5/17, GW51_11/5/17,	DAMW5_02_11/5/17, GW41_11/5/17	11-May-2017	----	----	----	14-May-2017	07-Nov-2017	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW73_11/5/17, GW51_11/5/17,	DAMW5_02_11/5/17, GW41_11/5/17	11-May-2017	----	----	----	14-May-2017	07-Nov-2017	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) GW73_11/5/17, GW51_11/5/17,	DAMW5_02_11/5/17, GW41_11/5/17	11-May-2017	----	----	----	14-May-2017	07-Nov-2017	✓



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	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	3	17	17.65	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	28	10.71	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	4	37	10.81	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	18	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	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	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	4	36	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	17	11.76	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	28	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	37	5.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	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							
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	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	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	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	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	18	0.00	5.00	*	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	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	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Matrix Spikes (MS) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	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	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	36	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	8	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)
Ammonium as N	EK055G-NH ₄	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH ₃ G. 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)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. 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 SO ₄ DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. 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)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.
<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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1705994

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 5
Order number	: 60537182	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermans Bend		
Sampler	: JM, MW		

Dates

Date Samples Received	: 12-May-2017 10:40	Issue Date	: 12-May-2017
Client Requested Due Date	: 19-May-2017	Scheduled Reporting Date	: 19-May-2017

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 4	Temperature	: 1.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 30 / 23

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Sample 'MW9AI_11/5/17' to be filtered through a 0.45um filter prior to the dissolved metals analysis.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale & ALS Sydney.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

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

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
MW9AI_11/5/17	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
MW9AI_11/5/17	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020F Dissolved Metals by ICPMS	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EK055G-NH4 Ammonium as N	WATER - NT-01 & 02A Ca, Mg, Na, K, Cl, SO4, Alkalinity & Fluoride	WATER - NT-04 Nitrite and Nitrate	WATER - W-02T 8 metals (Total)	WATER - W-26 TRH/BTEX/N/PAH/8 Metals
EM1705994-001	10-May-2017 00:00	GW77_10/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-002	10-May-2017 00:00	GW74_10/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-003	10-May-2017 00:00	GW76_10/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-004	10-May-2017 00:00	GW42AC_10/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-008	11-May-2017 00:00	GW73_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-009	11-May-2017 00:00	GMW03_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-010	11-May-2017 00:00	DAMW5_02_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-013	11-May-2017 00:00	GW62_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-014	11-May-2017 00:00	GMW83_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-015	11-May-2017 00:00	MW9AI_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-016	11-May-2017 00:00	MW1371_02_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-019	11-May-2017 00:00	GW51_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-020	11-May-2017 00:00	GW41_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-021	11-May-2017 00:00	GW48_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-022	11-May-2017 00:00	GW53_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-023	11-May-2017 00:00	QC101_11/5/17	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) WATER No analysis requested	WATER - EA005P pH (PC)	WATER - EA015H Total Dissolved Solids - High Level	WATER - ED043 Total Oxidised Sulfur as SO4 2-	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - EK071G Reactive Phosphorus by Discrete analyser	WATER - EP074-WF Full VOCs with WF DL incl DCM & Acetone
EM1705994-001	10-May-2017 00:00	GW77_10/5/17		✓	✓	✓	✓	✓	✓
EM1705994-002	10-May-2017 00:00	GW74_10/5/17		✓	✓	✓	✓	✓	
EM1705994-003	10-May-2017 00:00	GW76_10/5/17		✓	✓	✓	✓	✓	
EM1705994-004	10-May-2017 00:00	GW42AC_10/5/17		✓	✓	✓	✓	✓	



			(On Hold) WATER No analysis requested	WATER - EA005P pH (PC)	WATER - EA015H Total Dissolved Solids - High Level	WATER - ED043 Total Oxidised Sulfur as SO4 2-	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - EK071G Reactive Phosphorus by Discrete analyser	WATER - EP074-WF Full VOCs with WF DL incl DCM & Acetone
EM1705994-005	10-May-2017 00:00	QC05_10/5/17	✓						
EM1705994-006	10-May-2017 00:00	QC06_10/5/17	✓						
EM1705994-007	10-May-2017 00:00	QC07_10/5/17	✓						
EM1705994-008	11-May-2017 00:00	GW73_11/5/17		✓	✓	✓	✓	✓	✓
EM1705994-009	11-May-2017 00:00	GMW03_11/5/17		✓	✓	✓	✓	✓	✓
EM1705994-010	11-May-2017 00:00	DAMW5_02_11/5/17		✓	✓	✓	✓	✓	✓
EM1705994-011	11-May-2017 00:00	QC08_11/5/17	✓						
EM1705994-012	11-May-2017 00:00	QC09_11/5/17	✓						
EM1705994-013	11-May-2017 00:00	GW62_11/5/17		✓	✓	✓	✓	✓	
EM1705994-014	11-May-2017 00:00	GMW83_11/5/17		✓	✓	✓	✓	✓	
EM1705994-015	11-May-2017 00:00	MW9AI_11/5/17		✓	✓	✓	✓	✓	✓
EM1705994-016	11-May-2017 00:00	MW1371_02_11/5/17		✓	✓	✓	✓	✓	
EM1705994-017	11-May-2017 00:00	QC10_11/5/17	✓						
EM1705994-018	11-May-2017 00:00	QC11_11/5/17	✓						
EM1705994-019	11-May-2017 00:00	GW51_11/5/17		✓	✓	✓	✓	✓	
EM1705994-020	11-May-2017 00:00	GW41_11/5/17		✓	✓	✓	✓	✓	✓
EM1705994-021	11-May-2017 00:00	GW48_11/5/17		✓	✓	✓	✓	✓	✓
EM1705994-022	11-May-2017 00:00	GW53_11/5/17		✓	✓	✓	✓	✓	
EM1705994-023	11-May-2017 00:00	QC101_11/5/17		✓	✓	✓	✓	✓	✓
EM1705994-024	11-May-2017 00:00	QC103_11/5/17					✓		
EM1705994-025	11-May-2017 00:00	QC104_11/5/17					✓		

Matrix: WATER

Laboratory sample ID Client sampling date / time Client sample ID

			WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - W-05T TRH/BTEXN/8 Metals (Total)	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1705994-008	11-May-2017 00:00	GW73_11/5/17	✓		
EM1705994-010	11-May-2017 00:00	DAMW5_02_11/5/17	✓		
EM1705994-019	11-May-2017 00:00	GW51_11/5/17	✓		
EM1705994-020	11-May-2017 00:00	GW41_11/5/17	✓		
EM1705994-024	11-May-2017 00:00	QC103_11/5/17		✓	
EM1705994-025	11-May-2017 00:00	QC104_11/5/17		✓	
EM1705994-026	11-May-2017 00:00	QC105_11/5/17			✓
EM1705994-027	11-May-2017 00:00	QC13			✓
EM1705994-028	11-May-2017 00:00	QC14			✓



			WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - W-05T TRH/BTEXN/8 Metals (Total)	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1705994-029	11-May-2017 00:00	QC15			✓
EM1705994-030	11-May-2017 00:00	QC12			✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

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

Method	Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
					Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator								
	DAMW5_02_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GMW03_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GMW83_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW41_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW42AC_10/5/17	Clear Plastic Bottle - Natural	----	10-May-2017	12-May-2017	✘	----	----
	GW48_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW51_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW53_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW62_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW73_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW74_10/5/17	Clear Plastic Bottle - Natural	----	10-May-2017	12-May-2017	✘	----	----
	GW76_10/5/17	Clear Plastic Bottle - Natural	----	10-May-2017	12-May-2017	✘	----	----
	GW77_10/5/17	Clear Plastic Bottle - Natural	----	10-May-2017	12-May-2017	✘	----	----
	MW1371_02_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	MW9AI_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	QC101_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1705994

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 5
Order number	: 60537182	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermans Bend		
Sampler	: JM, MW		

Dates

Date Samples Received	: 12-May-2017 10:40	Issue Date	: 15-May-2017
Client Requested Due Date	: 19-May-2017	Scheduled Reporting Date	: 17-May-2017

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 4	Temperature	: 1.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 30 / 23

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Sample 'MW9AI_11/5/17' to be filtered through a 0.45um filter prior to the dissolved metals analysis.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale & ALS Sydney.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

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

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
MW9AI_11/5/17	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
MW9AI_11/5/17	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020F Dissolved Metals by ICPMS	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EK055G-NH4 Ammonium as N	WATER - NT-01 & 02A Ca, Mg, Na, K, Cl, SO4, Alkalinity & Fluoride	WATER - NT-04 Nitrite and Nitrate	WATER - W-02T 8 metals (Total)	WATER - W-26 TRH/TEXN/PAH/8 Metals
EM1705994-001	10-May-2017 00:00	GW77_10/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-002	10-May-2017 00:00	GW74_10/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-003	10-May-2017 00:00	GW76_10/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-004	10-May-2017 00:00	GW42AC_10/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-008	11-May-2017 00:00	GW73_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-009	11-May-2017 00:00	GMW03_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-010	11-May-2017 00:00	DAMW5_02_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-013	11-May-2017 00:00	GW62_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-014	11-May-2017 00:00	GMW83_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-015	11-May-2017 00:00	MW9AI_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-016	11-May-2017 00:00	MW1371_02_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-019	11-May-2017 00:00	GW51_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-020	11-May-2017 00:00	GW41_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-021	11-May-2017 00:00	GW48_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-022	11-May-2017 00:00	GW53_11/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-023	11-May-2017 00:00	QC101_11/5/17	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PC)	WATER - EA015H Total Dissolved Solids - High Level	WATER - ED043 Total Oxidised Sulfur as SO4 2-	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - EK071G Reactive Phosphorus by Discrete analyser	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP074-WF Full VOCs with WF DL incl DCM & Acetone
EM1705994-001	10-May-2017 00:00	GW77_10/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-002	10-May-2017 00:00	GW74_10/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-003	10-May-2017 00:00	GW76_10/5/17	✓	✓	✓	✓	✓	✓	✓
EM1705994-004	10-May-2017 00:00	GW42AC_10/5/17	✓	✓	✓	✓	✓	✓	✓



			WATER - EA005P pH (PC)	WATER - EA015H Total Dissolved Solids - High Level	WATER - ED043 Total Oxidised Sulfur as SO4 2-	WATER - EG020T Total Recoverable Metals by ICPMS (including Reactive Phosphorus by Discrete analyser	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP074-WF Full VOCs with WF DL incl DCM & Acetone
EM1705994-008	11-May-2017 00:00	GW73_11/5/17	✓	✓	✓	✓	✓	✓
EM1705994-009	11-May-2017 00:00	GMW03_11/5/17	✓	✓	✓	✓	✓	✓
EM1705994-010	11-May-2017 00:00	DAMW5_02_11/5/17	✓	✓	✓	✓	✓	✓
EM1705994-013	11-May-2017 00:00	GW62_11/5/17	✓	✓	✓	✓	✓	
EM1705994-014	11-May-2017 00:00	GMW83_11/5/17	✓	✓	✓	✓	✓	
EM1705994-015	11-May-2017 00:00	MW9AI_11/5/17	✓	✓	✓	✓	✓	✓
EM1705994-016	11-May-2017 00:00	MW1371_02_11/5/17	✓	✓	✓	✓	✓	
EM1705994-019	11-May-2017 00:00	GW51_11/5/17	✓	✓	✓	✓	✓	
EM1705994-020	11-May-2017 00:00	GW41_11/5/17	✓	✓	✓	✓	✓	✓
EM1705994-021	11-May-2017 00:00	GW48_11/5/17	✓	✓	✓	✓	✓	✓
EM1705994-022	11-May-2017 00:00	GW53_11/5/17	✓	✓	✓	✓	✓	
EM1705994-023	11-May-2017 00:00	QC101_11/5/17	✓	✓	✓	✓	✓	✓
EM1705994-024	11-May-2017 00:00	QC103_11/5/17				✓		
EM1705994-025	11-May-2017 00:00	QC104_11/5/17				✓		

Matrix: WATER

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - W-05T TRH/BTEXN/8 Metals (Total)	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1705994-005	10-May-2017 00:00	QC05_10/5/17	✓			
EM1705994-006	10-May-2017 00:00	QC06_10/5/17	✓			
EM1705994-007	10-May-2017 00:00	QC07_10/5/17	✓			
EM1705994-008	11-May-2017 00:00	GW73_11/5/17		✓		
EM1705994-010	11-May-2017 00:00	DAMW5_02_11/5/17		✓		
EM1705994-011	11-May-2017 00:00	QC08_11/5/17	✓			
EM1705994-012	11-May-2017 00:00	QC09_11/5/17	✓			
EM1705994-017	11-May-2017 00:00	QC10_11/5/17	✓			
EM1705994-018	11-May-2017 00:00	QC11_11/5/17	✓			
EM1705994-019	11-May-2017 00:00	GW51_11/5/17		✓		
EM1705994-020	11-May-2017 00:00	GW41_11/5/17		✓		
EM1705994-024	11-May-2017 00:00	QC103_11/5/17			✓	
EM1705994-025	11-May-2017 00:00	QC104_11/5/17			✓	
EM1705994-026	11-May-2017 00:00	QC105_11/5/17				✓
EM1705994-027	11-May-2017 00:00	QC13				✓
EM1705994-028	11-May-2017 00:00	QC14				✓



			(On Hold) WATER	No analysis requested	WATER - EP231X	PFAS - Full Suite (28 analytes)	WATER - W-05T	TRH/BTEXN/8 Metals (Total)	WATER - W-18	TRH(C6 - C9)/BTEXN
EM1705994-029	11-May-2017 00:00	QC15								✓
EM1705994-030	11-May-2017 00:00	QC12								✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: WATER

Evaluation: ✘ = Holding time breach ; ✓ = Within holding time.

Method	Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
					Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator								
	DAMW5_02_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GMW03_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GMW83_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW41_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW42AC_10/5/17	Clear Plastic Bottle - Natural	----	10-May-2017	12-May-2017	✘	----	----
	GW48_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW51_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW53_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW62_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW73_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	GW74_10/5/17	Clear Plastic Bottle - Natural	----	10-May-2017	12-May-2017	✘	----	----
	GW76_10/5/17	Clear Plastic Bottle - Natural	----	10-May-2017	12-May-2017	✘	----	----
	GW77_10/5/17	Clear Plastic Bottle - Natural	----	10-May-2017	12-May-2017	✘	----	----
	MW1371_02_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	MW9AI_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----
	QC101_11/5/17	Clear Plastic Bottle - Natural	----	11-May-2017	12-May-2017	✘	----	----

CERTIFICATE OF ANALYSIS

Work Order	: EM1705994	Page	: 1 of 34
Amendment	: 1	Laboratory	: Environmental Division Melbourne
Client	: AECOM Australia Pty Ltd	Contact	: Carol Walsh
Contact	: MS AVERYLL COYNE	Address	: 4 Westall Rd Springvale VIC Australia 3171
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Telephone	: +61-3-8549 9608
Telephone	: +61 03 9653 1234	Date Samples Received	: 12-May-2017 10:40
Project	: 60537182	Date Analysis Commenced	: 12-May-2017
Order number	: 60537182 3.5	Issue Date	: 02-Jun-2017 17:10
C-O-C number	: ----		
Sampler	: JM, MW		
Site	: Fishermans Bend		
Quote number	: ME/199/16		
No. of samples received	: 30		
No. of samples analysed	: 23		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Herman Lin	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- TDS by method EA-015 for EM1705994 #4, 14-16, 19-23 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- It is recognised that total metals is less than dissolved metals for sample EM1705994-004. However, the difference is within experimental variation of the methods.
- **EP074-WF: Sample EM1705994-009 has LOR raised for Acetone due to laboratory background.**
- Sample 'MW9AI_11/5/17' was filtered through a 0.45um filter prior to the dissolved metals analysis.
- Ionic Balance out of acceptable limits for sample #20 and #22 due to analytes not quantified in this report.
- Amendment (2/6/17): This report has been amended and re-released to allow the reporting of additional analytical data.
- 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 #9, #15 and #16.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- 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	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time				10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.77	7.35	7.53	5.53	7.49	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	409	1030	1200	349	614	
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	224	694	439	6	400	
Total Alkalinity as CaCO3	----	1	mg/L	224	694	439	6	400	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	89	245	114	173	129	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	170	308	136	168	176	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	24	56	346	24	30	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	81	129	97	43	87	
Magnesium	7439-95-4	1	mg/L	15	59	27	11	32	
Sodium	7440-23-5	1	mg/L	22	132	220	18	64	
Potassium	7440-09-7	1	mg/L	5	20	20	2	12	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.04	0.04	0.04	1.63	0.05	
Arsenic	7440-38-2	0.001	mg/L	0.002	0.007	0.002	0.021	0.002	
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	0.006	0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.134	0.408	0.210	0.319	0.172	
Nickel	7440-02-0	0.001	mg/L	0.018	0.032	0.051	0.021	0.022	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.010	0.013	0.010	0.053	0.009	
Iron	7439-89-6	0.05	mg/L	0.95	6.45	1.06	1.74	2.09	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	4.78	17.2	13.8	3.73	5.04	
Arsenic	7440-38-2	0.001	mg/L	0.012	0.039	0.026	0.023	0.009	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time				10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	0.0013	0.0002	0.0012	<0.0001	0.0002	
Chromium	7440-47-3	0.001	mg/L	0.018	0.056	0.050	0.012	0.015	
Copper	7440-50-8	0.001	mg/L	0.010	0.018	0.017	0.001	0.026	
Nickel	7440-02-0	0.001	mg/L	0.023	0.065	0.074	0.018	0.029	
Lead	7439-92-1	0.001	mg/L	0.039	0.210	0.024	<0.001	0.036	
Zinc	7440-66-6	0.005	mg/L	0.060	0.073	0.228	0.038	0.092	
Manganese	7439-96-5	0.001	mg/L	0.210	0.544	0.321	0.328	0.207	
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	13.6	40.2	24.1	2.89	11.7	
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.9	0.2	0.5	1.0	0.5	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.18	11.5	3.30	0.16	2.47	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.18	11.4	3.27	0.16	2.46	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.07	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	1.03	<0.01	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	1.10	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	<0.01	0.06	0.03	<0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	7.00	20.5	20.9	4.40	11.5	
Total Cations	----	0.01	meq/L	6.36	17.5	17.1	3.88	10.1	
Ionic Balance	----	0.01	%	4.82	7.88	9.89	6.20	6.75	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	5	10	12	22	9	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time					10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
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
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	220	----	----	----	----	<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	<1	----	----	----	----	<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



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time					10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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
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



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time				10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	140	<100	140	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	140	<100	140	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
EP080: BTEXN									
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	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	----	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	----	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	----	----	----	0.04	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	----	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	----	0.07	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	----	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	----	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	----	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	----	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	----	----	<0.02	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time				10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	----	----	0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	----	----	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	----	----	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	----	----	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	----	----	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	----	----	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	----	----	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	----	----	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	----	----	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	----	----	<0.05	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	----	----	----	----	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	----	----	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	----	----	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	----	----	<0.02	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	----	----	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	----	----	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	----	----	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW77_10/5/17	GW74_10/5/17	GW76_10/5/17	GW42AC_10/5/17	GW73_11/5/17
Client sampling date / time				10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	10-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-001	EM1705994-002	EM1705994-003	EM1705994-004	EM1705994-008	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	----	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	----	----	----	0.12	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	----	0.11	
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	----	0.12	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	82.8	----	----	----	90.6	
Toluene-D8	2037-26-5	1	%	73.4	----	----	----	73.5	
4-Bromofluorobenzene	460-00-4	1	%	82.7	----	----	----	80.1	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	42.2	36.2	37.3	35.0	35.7	
2-Chlorophenol-D4	93951-73-6	1	%	99.5	88.4	91.1	84.4	88.2	
2,4,6-Tribromophenol	118-79-6	1	%	59.8	58.9	81.5	77.1	77.0	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	94.6	82.8	91.5	88.9	82.7	
Anthracene-d10	1719-06-8	1	%	110	111	114	110	115	
4-Terphenyl-d14	1718-51-0	1	%	110	102	102	98.1	104	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	77.3	81.2	81.3	90.6	83.4	
Toluene-D8	2037-26-5	2	%	75.1	74.0	74.1	80.6	74.7	
4-Bromofluorobenzene	460-00-4	2	%	86.6	80.0	81.9	90.6	84.5	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	----	----	----	104	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.54	7.35	7.48	6.17	7.18	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	494	572	4390	851	2700	
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	408	503	180	91	499	
Total Alkalinity as CaCO3	----	1	mg/L	408	503	180	91	499	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	40	8	336	42	121	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	55	20	503	52	248	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	24	24	2040	11	347	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	32	74	356	26	28	
Magnesium	7439-95-4	1	mg/L	28	16	92	6	9	
Sodium	7440-23-5	1	mg/L	79	88	817	19	366	
Potassium	7440-09-7	1	mg/L	24	23	33	5	15	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.06	0.05	0.03	0.10	1.99	
Arsenic	7440-38-2	0.001	mg/L	0.050	0.006	0.001	<0.001	0.027	
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	0.003	0.001	<0.001	0.002	0.040	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.099	0.262	0.171	0.007	0.027	
Nickel	7440-02-0	0.001	mg/L	0.024	0.017	0.018	0.074	0.048	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.008	0.010	0.012	0.281	0.012	
Iron	7439-89-6	0.05	mg/L	4.21	5.41	0.32	0.07	2.52	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	2.47	0.47	7.64	2.78	11.5	
Arsenic	7440-38-2	0.001	mg/L	0.125	0.007	0.010	0.011	0.090	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0004	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.014	0.004	0.020	0.010	0.101	
Copper	7440-50-8	0.001	mg/L	0.019	0.003	0.005	0.005	0.009	
Nickel	7440-02-0	0.001	mg/L	0.026	0.018	0.028	0.086	0.080	
Lead	7439-92-1	0.001	mg/L	0.009	0.003	0.014	0.008	0.012	
Zinc	7440-66-6	0.005	mg/L	0.056	0.039	0.030	0.382	0.059	
Manganese	7439-96-5	0.001	mg/L	0.124	0.270	0.215	0.013	0.049	
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	15.6	6.35	11.8	3.60	16.3	
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	1.1	1.8	0.5	0.3	<0.1	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	9.72	3.33	0.73	0.06	12.2	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	9.65	3.32	0.72	0.06	2.40	
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	0.25	<0.01	0.14	1.56	0.04	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.26	<0.01	0.15	1.57	0.04	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.09	0.17	<0.01	<0.01	0.08	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	9.66	10.9	68.1	3.00	22.3	
Total Cations	----	0.01	meq/L	7.95	9.42	61.7	2.74	18.4	
Ionic Balance	----	0.01	%	9.71	7.22	4.94	4.48	9.42	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	28	33	6	4	95	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
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	
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	<1	<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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	----	----	4	
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	<1	----	----	<1	
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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
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	
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	<0.6	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.6	<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	110	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	740	520	<100	<100	200	
C29 - C36 Fraction	----	50	µg/L	60	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	910	520	<50	<50	200	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	230	150	<100	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	680	460	<100	<100	200	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	910	610	<100	<100	200	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	230	150	<100	<100	<100	
EP080: BTEXN									
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	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	<0.02	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	<0.02	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	<0.02	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	<0.01	----	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	----	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	----	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	<0.02	----	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	<0.02	----	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	<0.02	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	<0.01	----	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	----	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	----	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	----	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	----	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	<0.02	----	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	----	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	----	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	----	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	----	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	----	<0.05	----	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	----	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	----	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	----	----	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	----	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	----	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GMW03_11/5/17	DAMW5_02_11/5/17	GW62_11/5/17	GMW83_11/5/17	MW9AI_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-009	EM1705994-010	EM1705994-013	EM1705994-014	EM1705994-015	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	----	----	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	<0.01	----	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	<0.01	----	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	<0.01	----	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	88.2	90.2	----	----	89.6	
Toluene-D8	2037-26-5	1	%	70.4	85.6	----	----	83.8	
4-Bromofluorobenzene	460-00-4	1	%	85.4	76.0	----	----	86.5	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	32.8	27.2	16.9	26.0	37.6	
2-Chlorophenol-D4	93951-73-6	1	%	75.6	68.5	34.0	63.2	87.6	
2,4,6-Tribromophenol	118-79-6	1	%	82.2	76.2	41.5	69.2	80.9	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	73.4	76.8	36.3	65.7	94.9	
Anthracene-d10	1719-06-8	1	%	78.8	72.2	53.5	95.0	97.6	
4-Terphenyl-d14	1718-51-0	1	%	73.5	90.9	51.7	105	98.3	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	81.9	83.6	88.4	75.1	83.6	
Toluene-D8	2037-26-5	2	%	70.4	87.7	79.2	72.0	85.6	
4-Bromofluorobenzene	460-00-4	2	%	74.7	79.9	87.4	73.8	90.7	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	111	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.42	6.41	7.28	6.91	6.51	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2170	3690	1100	2470	2420	
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	648	343	143	295	294	
Total Alkalinity as CaCO3	----	1	mg/L	648	343	143	295	294	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	83	232	84	446	497	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	113	454	169	----	620	
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	699	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	46	1070	20	121	99	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	55	98	64	86	82	
Magnesium	7439-95-4	1	mg/L	40	63	7	45	36	
Sodium	7440-23-5	1	mg/L	159	621	15	183	181	
Potassium	7440-09-7	1	mg/L	12	24	6	7	10	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.39	0.33	0.10	0.10	0.38	
Arsenic	7440-38-2	0.001	mg/L	0.039	0.006	0.004	0.007	0.017	
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	0.007	0.002	0.001	0.003	0.006	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.202	0.073	0.029	0.057	0.115	
Nickel	7440-02-0	0.001	mg/L	0.047	0.009	0.005	0.033	0.044	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.012	0.014	0.010	0.010	0.030	
Iron	7439-89-6	0.05	mg/L	0.12	1.25	0.64	3.45	2.20	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	1.02	13.9	24.9	16.3	7.93	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Arsenic	7440-38-2	0.001	mg/L	0.044	0.020	0.032	0.022	0.032	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	0.0001	0.0002	
Chromium	7440-47-3	0.001	mg/L	0.011	0.040	0.064	0.054	0.038	
Copper	7440-50-8	0.001	mg/L	0.004	0.011	0.017	0.011	0.010	
Nickel	7440-02-0	0.001	mg/L	0.055	0.024	0.036	0.062	0.063	
Lead	7439-92-1	0.001	mg/L	0.004	0.011	0.027	0.015	0.009	
Zinc	7440-66-6	0.005	mg/L	0.029	0.049	2.26	0.054	0.299	
Manganese	7439-96-5	0.001	mg/L	0.216	0.110	0.112	0.094	0.137	
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	1.06	16.1	38.0	23.4	8.81	
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.8	0.5	0.2	0.1	0.2	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	7.82	0.38	0.12	0.71	0.65	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	7.82	0.38	0.12	0.71	0.65	
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	0.02	0.49	5.49	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.02	0.02	0.50	5.49	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.44	0.02	<0.01	<0.01	<0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	16.0	41.9	5.17	18.6	19.0	
Total Cations	----	0.01	meq/L	13.2	37.7	4.58	16.1	15.2	
Ionic Balance	----	0.01	%	9.28	5.24	6.10	7.08	11.2	
EP005: Total Organic Carbon (TOC)									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EP005: Total Organic Carbon (TOC) - Continued									
Total Organic Carbon	----	1	mg/L	35	15	15	33	43	
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	----	
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	----	----	<10	<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	----	----	<1	<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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time					11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	----	
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	----	
1,1,1,2,2-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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EP074F: Halogenated Aromatic Compounds - Continued									
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	----	
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	
Benz(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									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
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									
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	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	0.08	0.04	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	<0.01	0.02	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	<0.02	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	<0.1	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	<0.02	<0.02	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	<0.01	<0.01	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	<0.05	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	<0.02	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	<0.02	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	<0.02	----	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	<0.05	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	<0.05	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	<0.05	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1371_02_11/5/17	GW51_11/5/17	GW41_11/5/17	GW48_11/5/17	GW53_11/5/17
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-016	EM1705994-019	EM1705994-020	EM1705994-021	EM1705994-022	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	<0.05	----	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	0.08	0.06	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	0.08	0.06	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	0.08	0.06	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	----	----	90.0	86.6	----	
Toluene-D8	2037-26-5	1	%	----	----	84.4	78.6	----	
4-Bromofluorobenzene	460-00-4	1	%	----	----	90.7	83.3	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	32.3	32.9	32.9	30.6	37.6	
2-Chlorophenol-D4	93951-73-6	1	%	80.7	87.0	87.5	78.5	87.9	
2,4,6-Tribromophenol	118-79-6	1	%	89.6	66.6	62.0	61.8	68.9	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	79.0	94.7	91.9	90.5	88.7	
Anthracene-d10	1719-06-8	1	%	106	93.7	112	98.5	77.3	
4-Terphenyl-d14	1718-51-0	1	%	93.1	109	112	92.2	98.0	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	94.9	90.1	83.6	82.2	82.5	
Toluene-D8	2037-26-5	2	%	89.4	75.8	85.8	82.1	72.2	
4-Bromofluorobenzene	460-00-4	2	%	90.9	86.2	95.9	89.3	83.6	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	107	118	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC101_11/5/17	QC103_11/5/17	QC104_11/5/17	QC105_11/5/17	QC13
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-023	EM1705994-024	EM1705994-025	EM1705994-026	EM1705994-027	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.93	----	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2450	----	----	----	----	----
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	294	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	294	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	452	----	----	----	----	----
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	697	----	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	114	----	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	90	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	47	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	194	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	7	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.12	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.008	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	0.003	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.050	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.033	----	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.010	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	3.55	----	----	----	----	----
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	16.9	<0.01	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.024	<0.001	<0.001	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC101_11/5/17	QC103_11/5/17	QC104_11/5/17	QC105_11/5/17	QC13
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-023	EM1705994-024	EM1705994-025	EM1705994-026	EM1705994-027	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	0.055	<0.001	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	0.011	<0.001	<0.001	----	----	
Nickel	7440-02-0	0.001	mg/L	0.062	<0.001	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	0.015	<0.001	<0.001	----	----	
Zinc	7440-66-6	0.005	mg/L	0.054	<0.005	<0.005	----	----	
Manganese	7439-96-5	0.001	mg/L	0.097	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Iron	7439-89-6	0.05	mg/L	24.1	<0.05	<0.05	----	----	
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	<0.0001	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.1	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.72	----	----	----	----	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.72	----	----	----	----	
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	0.50	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.51	----	----	----	----	
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	18.5	----	----	----	----	
Total Cations	----	0.01	meq/L	17.0	----	----	----	----	
Ionic Balance	----	0.01	%	4.30	----	----	----	----	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	31	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC101_11/5/17	QC103_11/5/17	QC104_11/5/17	QC105_11/5/17	QC13
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-023	EM1705994-024	EM1705994-025	EM1705994-026	EM1705994-027	
				Result	Result	Result	Result	Result	
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	----	----	----	----	
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	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC101_11/5/17	QC103_11/5/17	QC104_11/5/17	QC105_11/5/17	QC13
Client sampling date / time					11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1705994-023	EM1705994-024	EM1705994-025	EM1705994-026	EM1705994-027	EM1705994-027
				Result	Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
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	----	----	----	----	----
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	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC101_11/5/17	QC103_11/5/17	QC104_11/5/17	QC105_11/5/17	QC13
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705994-023	EM1705994-024	EM1705994-025	EM1705994-026	EM1705994-027	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<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	%	90.0	----	----	----	----	
Toluene-D8	2037-26-5	1	%	81.4	----	----	----	----	
4-Bromofluorobenzene	460-00-4	1	%	86.2	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	36.0	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	1	%	86.7	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	1	%	60.0	----	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	83.5	----	----	----	----	
Anthracene-d10	1719-06-8	1	%	98.6	----	----	----	----	
4-Terphenyl-d14	1718-51-0	1	%	104	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	82.8	78.6	92.4	84.0	92.2	
Toluene-D8	2037-26-5	2	%	82.9	80.8	83.7	70.9	78.3	
4-Bromofluorobenzene	460-00-4	2	%	91.2	86.8	89.2	76.5	89.7	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC14	QC15	QC12	----	----
Client sampling date / time				11-May-2017 00:00	11-May-2017 00:00	11-May-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1705994-028	EM1705994-029	EM1705994-030	-----	-----	
				Result	Result	Result	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
[^] C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
[^] Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	----	----	
[^] Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	95.6	93.3	101	----	----	
Toluene-D8	2037-26-5	2	%	91.2	89.7	99.9	----	----	
4-Bromofluorobenzene	460-00-4	2	%	96.9	94.5	101	----	----	



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
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	130

QUALITY CONTROL REPORT

Work Order	: EM1705994	Page	: 1 of 22
Amendment	: 1		
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 12-May-2017
Order number	: 60537182 3.5	Date Analysis Commenced	: 12-May-2017
C-O-C number	: ----	Issue Date	: 02-Jun-2017
Sampler	: JM, MW		
Site	: Fishermans Bend		
Quote number	: ME/199/16		
No. of samples received	: 30		
No. of samples analysed	: 23		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Herman Lin	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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: 887296)									
EM1705988-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.80	6.77	0.442	0% - 20%
EM1705990-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.94	5.94	0.00	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 887298)									
EM1705994-009	GMW03_11/5/17	EA005-P: pH Value	----	0.01	pH Unit	7.54	7.57	0.397	0% - 20%
EM1705994-023	QC101_11/5/17	EA005-P: pH Value	----	0.01	pH Unit	6.93	7.02	1.29	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 886948)									
EM1705990-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6360	6380	0.267	0% - 20%
EM1705994-014	GMW83_11/5/17	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	851	824	3.22	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 887297)									
EM1705988-004	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	119	119	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	119	119	0.00	0% - 20%
EM1705990-005	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	37	37	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	37	37	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 887299)									
EM1705994-009	GMW03_11/5/17	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	408	410	0.264	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	408	410	0.264	0% - 20%
EM1705994-023	QC101_11/5/17	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



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: 887299) - continued									
EM1705994-023	QC101_11/5/17	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	294	295	0.415	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	294	295	0.415	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 887014)									
EM1705844-006	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	7800	7880	1.01	0% - 20%
EM1705994-015	MW9AI_11/5/17	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	121	120	0.865	0% - 20%
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 893328)									
EM1705994-001	GW77_10/5/17	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	170	190	10.8	0% - 50%
EM1705994-015	MW9AI_11/5/17	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	248	241	2.78	0% - 20%
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 900294)									
EM1705994-021	GW48_11/5/17	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	699	663	5.32	0% - 20%
EM1706144-001	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	74	84	12.1	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 887013)									
EM1705844-006	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	28800	32700	12.4	0% - 20%
EM1705994-015	MW9AI_11/5/17	ED045G: Chloride	16887-00-6	1	mg/L	347	340	1.92	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 887217)									
EM1705994-001	GW77_10/5/17	ED093F: Calcium	7440-70-2	1	mg/L	81	82	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	15	15	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	22	21	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	5	5	0.00	No Limit
EM1705994-014	GMW83_11/5/17	ED093F: Calcium	7440-70-2	1	mg/L	26	26	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	6	6	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	19	19	0.00	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	5	5	0.00	No Limit
ED093F: Dissolved Major Cations (QC Lot: 887247)									
EM1705858-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	238	241	1.05	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	78	78	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	363	366	0.690	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	24	24	0.00	0% - 20%
EM1705953-007	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	151	152	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	11	11	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	18	18	0.00	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 887218)									
EM1705973-001	Anonymous	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	<0.001	<0.001	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	0.034	0.033	4.17	0% - 20%
		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	0.240	0.235	1.84	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 (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 887218) - continued									
EM1705973-001	Anonymous	EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.049	0.048	2.30	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.059	0.055	6.16	0% - 50%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.05	0.04	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	0.83	0.80	3.96	0% - 50%
EM1705994-014	GMW83_11/5/17	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	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	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	0.007	0.007	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.074	0.074	0.00	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.281	0.280	0.433	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.10	0.10	0.00	0% - 50%
		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	0.07	0.07	0.00	No Limit		
EG020F: Dissolved Metals by ICP-MS (QC Lot: 887249)									
EM1705979-001	Anonymous	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	<0.001	<0.001	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	0.020	0.020	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.011	0.010	13.9	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	<0.05	<0.05	0.00	No Limit		
EG020T: Total Metals by ICP-MS (QC Lot: 887234)									
EM1705980-015	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	0.002	0.002	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.110	0.097	13.0	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.15	0.15	0.00	0% - 50%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.35	0.31	11.9	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: 887234) - continued									
EM1705858-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0008	0.0011	37.6	0% - 50%
		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	0.002	0.002	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.271	0.270	0.00	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.036	0.038	2.93	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.127	0.132	3.49	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	2.12	2.10	0.962	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	0.30	0.29	0.00	No Limit		
EG020T: Total Metals by ICP-MS (QC Lot: 887237)									
EM1705994-010	DAMW5_02_11/5/17	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0004	0.0004	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.004	0.004	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	0.003	0.003	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.270	0.275	1.87	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.018	0.019	0.00	0% - 50%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.039	0.036	5.90	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.47	0.54	14.9	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	6.35	6.57	3.43	0% - 20%		
EM1705994-023	QC101_11/5/17	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	0.024	0.023	0.00	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.055	0.057	4.19	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.011	0.011	0.00	0% - 50%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.015	0.015	0.00	0% - 50%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.097	0.095	1.55	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.062	0.061	1.66	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.054	0.051	7.02	0% - 50%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	16.9	17.9	5.42	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	24.1	23.8	1.49	0% - 20%		
EG035F: Dissolved Mercury by FIMS (QC Lot: 887219)									
EM1705994-015	MW9AI_11/5/17	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1705994-001	GW77_10/5/17	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 887250)									
EM1705986-006	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	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 (%)	
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 893071)										
EM1705964-010	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0002	0.00	No Limit	
EM1705994-014	GMW83_11/5/17	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
EK040P: Fluoride by PC Titrator (QC Lot: 887292)										
EM1705985-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit	
EM1705965-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.1	0.00	No Limit	
EK040P: Fluoride by PC Titrator (QC Lot: 887300)										
EM1705994-009	GMW03_11/5/17	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.1	1.1	0.00	0% - 50%	
EM1705994-023	QC101_11/5/17	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	0.00	No Limit	
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 887132)										
EM1705994-001	GW77_10/5/17	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.18	0.19	0.00	0% - 50%	
EM1705994-015	MW9AI_11/5/17	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	12.2	12.2	0.186	0% - 20%	
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 887015)										
EM1705994-001	GW77_10/5/17	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EM1705994-015	MW9AI_11/5/17	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 887133)										
EM1705994-001	GW77_10/5/17	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EM1705994-015	MW9AI_11/5/17	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.04	0.04	0.00	No Limit	
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 887016)										
EM1705994-001	GW77_10/5/17	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EM1705994-015	MW9AI_11/5/17	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.08	0.06	16.4	No Limit	
EP005: Total Organic Carbon (TOC) (QC Lot: 897710)										
EM1705989-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	2	2	0.00	No Limit	
EM1705989-004	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.00	No Limit	
EP005: Total Organic Carbon (TOC) (QC Lot: 897711)										
EM1705994-016	MW1371_02_11/5/17	EP005: Total Organic Carbon	----	1	mg/L	35	35	0.00	0% - 20%	
EM1706071-004	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	4	5	0.00	No Limit	
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 886761)										
EM1705994-001	GW77_10/5/17	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	



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: 886761) - continued									
EM1705994-001	GW77_10/5/17	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: 886761)									
EM1705994-001	GW77_10/5/17	EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	220	260	16.8	0% - 20%
		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: 886761)									
EM1705994-001	GW77_10/5/17	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	<1	0.00	No Limit
EP074D: Fumigants (QC Lot: 886761)									
EM1705994-001	GW77_10/5/17	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: 886761)									
EM1705994-001	GW77_10/5/17	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



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: 886761) - continued									
EM1705994-001	GW77_10/5/17	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: 886761)									
EM1705994-001	GW77_10/5/17	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: 886761)									
EM1705994-001	GW77_10/5/17	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: 886761)									
EM1705994-001	GW77_10/5/17	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 886760)									
EM1705994-016	MW1371_02_11/5/17	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1705994-001	GW77_10/5/17	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 886762)									
EM1705980-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1705980-012	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 886760)									
EM1705994-016	MW1371_02_11/5/17	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1705994-001	GW77_10/5/17	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: 886762)									
EM1705980-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1705980-012	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 886760)									



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: 886760) - continued									
EM1705994-016	MW1371_02_11/5/17	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
EM1705994-001	GW77_10/5/17	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
EP080: BTEXN (QC Lot: 886762)									
EM1705980-001	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
EM1705980-012	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
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 886131)									
EM1705888-001	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EM1705888-003	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	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 (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 886131) - continued									
EM1705888-003	Anonymous	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 886131)									
EM1705888-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EM1705888-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 886131)									
EM1705888-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EM1705888-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	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 (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 886131) - continued									
EM1705888-003	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 886131)									
EM1705888-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EM1705888-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 886131)									
EM1705888-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EM1705888-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	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: 886948)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.5	96	106	
				<10	293 mg/L	101	96	106	
ED037P: Alkalinity by PC Titrator (QCLot: 887297)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	96.1	90	110	
ED037P: Alkalinity by PC Titrator (QCLot: 887299)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	96.0	90	110	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 887014)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	107	92	115	
				<1	100 mg/L	103	92	115	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 893328)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<10	500 mg/L	115	85	118	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<1	500 mg/L	98.0	85	118	
ED045G: Chloride by Discrete Analyser (QCLot: 887013)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	107	89	117	
				<1	1000 mg/L	104	92	112	
ED093F: Dissolved Major Cations (QCLot: 887217)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	100	92	108	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	97.8	92	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	99.4	89	107	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	98.8	89	107	
ED093F: Dissolved Major Cations (QCLot: 887247)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	97.3	92	108	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	96.6	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	97.3	89	107	
EG020F: Dissolved Metals by ICP-MS (QCLot: 887218)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	98.9	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.0	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.8	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.5	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.8	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.5	87	109	



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
EG020F: Dissolved Metals by ICP-MS (QCLot: 887218) - continued									
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	97.5	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.5	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.5	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.3	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.4	94	106	
EG020F: Dissolved Metals by ICP-MS (QCLot: 887249)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	99.1	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	95.7	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.4	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.5	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.0	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.5	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	92.7	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	96.5	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.4	94	106	
EG020T: Total Metals by ICP-MS (QCLot: 887234)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	106	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	104	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.5	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.2	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.9	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.1	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.6	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.1	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.5	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.9	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	99	110	
EG020T: Total Metals by ICP-MS (QCLot: 887237)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	108	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.9	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	100	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.4	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.8	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	102	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.5	91	111	



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	
EG020T: Total Metals by ICP-MS (QCLot: 887237) - continued								
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	97.9	86	110
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.8	88	112
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	109	99	110
EG035F: Dissolved Mercury by FIMS (QCLot: 887219)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.6	88	117
EG035F: Dissolved Mercury by FIMS (QCLot: 887250)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	91.8	88	117
EG035T: Total Recoverable Mercury by FIMS (QCLot: 893071)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	106	87	113
EK040P: Fluoride by PC Titrator (QCLot: 887292)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	111	85	112
EK040P: Fluoride by PC Titrator (QCLot: 887300)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	109	85	112
EK055G: Ammonia as N by Discrete Analyser (QCLot: 887132)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	100	80	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 887015)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	103	94	107
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 887133)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	89	114
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 887016)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	104	94	108
EP005: Total Organic Carbon (TOC) (QCLot: 897710)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	92.6	81	109
EP005: Total Organic Carbon (TOC) (QCLot: 897711)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	93.6	81	109
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 886761)								
EP074-WF: Benzene	71-43-2	1	µg/L	<1	20 µg/L	98.5	81	119
EP074-WF: Toluene	108-88-3	1	µg/L	<1	20 µg/L	97.4	84	117
EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	20 µg/L	106	83	114
EP074-WF: meta- & para-Xylene	108-38-3	1	µg/L	<1	40 µg/L	97.2	81	116
	106-42-3							
EP074-WF: Styrene	100-42-5	1	µg/L	<1	20 µg/L	95.2	82	118
EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	20 µg/L	97.2	85	115
EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	20 µg/L	95.2	81	113
EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	20 µg/L	94.6	76	111
EP074-WF: 1,3,5-Trimethylbenzene	108-67-8	1	µg/L	<1	20 µg/L	94.4	79	109
EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	20 µg/L	93.3	77	111



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	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 886761) - continued									
EP074-WF: 1,2,4-Trimethylbenzene	95-63-6	1	µg/L	<1	20 µg/L	94.9	79	108	
EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	20 µg/L	95.2	80	110	
EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	20 µg/L	95.4	75	111	
EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	20 µg/L	94.3	68	111	
EP074B: Oxygenated Compounds (QCLot: 886761)									
EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	200 µg/L	128	69	147	
EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	200 µg/L	101	77	124	
EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	200 µg/L	109	71	131	
EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	200 µg/L	94.6	73	128	
EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	200 µg/L	101	75	129	
EP074C: Sulfonated Compounds (QCLot: 886761)									
EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	20 µg/L	87.7	64	119	
EP074D: Fumigants (QCLot: 886761)									
EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	20 µg/L	102	74	117	
EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	20 µg/L	96.9	83	118	
EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	20 µg/L	83.6	74	109	
EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	20 µg/L	80.6	70	109	
EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	20 µg/L	# 119	81	116	
EP074E: Halogenated Aliphatic Compounds (QCLot: 886761)									
EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	200 µg/L	96.1	61	137	
EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	200 µg/L	102	66	137	
EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	200 µg/L	101	67	135	
EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	200 µg/L	99.2	52	128	
EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	200 µg/L	101	76	125	
EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	200 µg/L	106	74	123	
EP074-WF: 1,1-Dichloroethene	75-35-4	1	µg/L	<1	20 µg/L	99.7	75	120	
EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	20 µg/L	75.5	37	120	
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	20 µg/L	114	72	159	
EP074-WF: trans-1,2-Dichloroethene	156-60-5	1	µg/L	<1	20 µg/L	96.6	78	117	
EP074-WF: 1,1-Dichloroethane	75-34-3	1	µg/L	<1	20 µg/L	101	81	118	
EP074-WF: cis-1,2-Dichloroethene	156-59-2	1	µg/L	<1	20 µg/L	105	83	118	
EP074-WF: 1,1,1-Trichloroethane	71-55-6	1	µg/L	<1	20 µg/L	92.1	76	115	
EP074-WF: 1,1-Dichloropropylene	563-58-6	1	µg/L	<1	20 µg/L	95.9	75	117	
EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	20 µg/L	86.2	72	111	
EP074-WF: 1,2-Dichloroethane	107-06-2	1	µg/L	<1	20 µg/L	97.4	81	120	
EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	20 µg/L	96.6	78	116	
EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	20 µg/L	92.0	79	116	
EP074-WF: 1,1,2-Trichloroethane	79-00-5	1	µg/L	<1	20 µg/L	96.5	85	119	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP074E: Halogenated Aliphatic Compounds (QCLot: 886761) - continued									
EP074-WF: 1,3-Dichloropropane	142-28-9	1	µg/L	<1	20 µg/L	100	85	119	
EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	20 µg/L	105	76	120	
EP074-WF: 1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L	<1	20 µg/L	95.7	78	110	
EP074-WF: trans-1,4-Dichloro-2-butene	110-57-6	1	µg/L	<1	20 µg/L	86.0	64	118	
EP074-WF: cis-1,4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	20 µg/L	106	51	113	
EP074-WF: 1,1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L	<1	20 µg/L	98.0	85	121	
EP074-WF: 1,2,3-Trichloropropane	96-18-4	1	µg/L	<1	20 µg/L	97.6	84	118	
EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	20 µg/L	81.4	64	109	
EP074-WF: 1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	20 µg/L	83.0	65	115	
EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	20 µg/L	103	70	121	
EP074F: Halogenated Aromatic Compounds (QCLot: 886761)									
EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	20 µg/L	108	85	115	
EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	20 µg/L	86.8	82	116	
EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	20 µg/L	96.8	81	112	
EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	20 µg/L	95.4	80	110	
EP074-WF: 1,3-Dichlorobenzene	541-73-1	1	µg/L	<1	20 µg/L	95.5	80	110	
EP074-WF: 1,4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	20 µg/L	96.7	80	112	
EP074-WF: 1,2-Dichlorobenzene	95-50-1	1	µg/L	<1	20 µg/L	97.8	84	111	
EP074-WF: 1,2,4-Trichlorobenzene	120-82-1	1	µg/L	<1	20 µg/L	99.6	70	114	
EP074-WF: 1,2,3-Trichlorobenzene	87-61-6	1	µg/L	<1	20 µg/L	102	78	116	
EP074G: Trihalomethanes (QCLot: 886761)									
EP074-WF: Chloroform	67-66-3	1	µg/L	<1	20 µg/L	110	82	118	
EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	20 µg/L	86.2	75	112	
EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	20 µg/L	84.0	73	108	
EP074-WF: Bromoform	75-25-2	1	µg/L	<1	20 µg/L	81.2	68	107	
EP074H: Naphthalene (QCLot: 886761)									
EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	100	80	116	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 886962)									
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	79.8	39	110	
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	97.4	40	124	
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	82.8	47	117	
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	83.4	51	118	
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	85.7	53	119	
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	97.6	51	113	
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	89.2	59	123	
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	83.0	58	123	
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	92.5	52	126	
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	81.0	55	123	



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: 886962) - continued									
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	65.9	52	131	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	69.3	57	126	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	71.8	56	126	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	77.3	53	123	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	84.6	53	125	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	76.2	53	125	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 886760)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	71.4	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 886762)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	109	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 886963)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	104	53	123	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	104	57	133	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	97.2	55	141	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 886760)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	68.4	65	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 886762)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	109	65	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 886963)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	102	54	122	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	103	56	132	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	103	51	137	
EP080: BTEXN (QCLot: 886760)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	77.1	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	78.2	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	73.8	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	76.4	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	82.2	78	128	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	79.9	71	129	
EP080: BTEXN (QCLot: 886762)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	107	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	108	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	109	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	111	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	113	78	128	



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	
EP080: BTEXN (QCLot: 886762) - continued									
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	103	71	129	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 886131)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	111	70	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	80.8	70	130	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	102	70	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	109	70	130	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	95.6	70	130	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	102	70	130	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 886131)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	97.6	70	130	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	91.2	70	130	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	80.6	70	130	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	85.0	70	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	98.4	70	130	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	89.0	70	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	83.4	70	130	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	88.8	70	130	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	82.4	70	130	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	82.8	70	130	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	90.4	70	124	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 886131)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	102	70	130	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	101	70	130	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	89.2	70	129	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	1.25 µg/L	97.8	70	129	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	94.8	70	126	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	96.6	70	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	85.6	70	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 886131)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	85.4	70	130	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	106	70	130	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	89.4	70	130	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	97.2	70	130	



Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 887014)							
EM1705994-001	GW77_10/5/17	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 893328)							
EM1705994-002	GW74_10/5/17	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	113	70	130
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)							
EM1705994-023	QC101_11/5/17	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	120	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 887013)							
EM1705994-001	GW77_10/5/17	ED045G: Chloride	16887-00-6	400 mg/L	104	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 887218)							
EM1705973-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	98.4	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	98.0	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	96.4	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	95.8	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	91.7	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	98.0	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	97.6	75	131
EG020F: Dissolved Metals by ICP-MS (QCLot: 887249)							
EM1705979-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	102	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	100	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	96.9	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	94.1	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	92.9	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	95.4	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	98.0	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	98.8	75	131
EG020T: Total Metals by ICP-MS (QCLot: 887234)							
EM1705857-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	98.7	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	97.1	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	93.7	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	93.6	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	99.7	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	93.8	73	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
EG020T: Total Metals by ICP-MS (QCLot: 887234) - continued							
EM1705857-001	Anonymous	EG020A-T: Nickel	7440-02-0	1 mg/L	95.0	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	95.5	74	116
EG020T: Total Metals by ICP-MS (QCLot: 887237)							
EM1705994-010	DAMW5_02_11/5/17	EG020A-T: Arsenic	7440-38-2	1 mg/L	91.7	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	93.4	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	89.5	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	88.2	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	95.2	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	90.3	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	89.4	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	90.5	74	116
EG035F: Dissolved Mercury by FIMS (QCLot: 887219)							
EM1705994-002	GW74_10/5/17	EG035F: Mercury	7439-97-6	0.01 mg/L	91.7	70	120
EG035F: Dissolved Mercury by FIMS (QCLot: 887250)							
EM1705994-023	QC101_11/5/17	EG035F: Mercury	7439-97-6	0.01 mg/L	94.8	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 893071)							
EM1705994-001	GW77_10/5/17	EG035T: Mercury	7439-97-6	0.01 mg/L	87.9	70	130
EK040P: Fluoride by PC Titrator (QCLot: 887292)							
EM1705965-002	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	130	70	130
EK040P: Fluoride by PC Titrator (QCLot: 887300)							
EM1705994-010	DAMW5_02_11/5/17	EK040P: Fluoride	16984-48-8	5 mg/L	124	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 887132)							
EM1705994-001	GW77_10/5/17	EK055G: Ammonia as N	7664-41-7	1 mg/L	98.5	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 887015)							
EM1705994-002	GW74_10/5/17	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	89.5	80	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 887133)							
EM1705994-002	GW74_10/5/17	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	97.9	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 887016)							
EM1705994-002	GW74_10/5/17	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	97.0	79	123
EP005: Total Organic Carbon (TOC) (QCLot: 897710)							
EM1705989-002	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	91.4	80	114
EP005: Total Organic Carbon (TOC) (QCLot: 897711)							
EM1705994-019	GW51_11/5/17	EP005: Total Organic Carbon	----	100 mg/L	91.6	80	114
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 886761)							



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
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 886761) - continued							
EM1705994-008	GW73_11/5/17	EP074-WF: Benzene	71-43-2	20 µg/L	102	76	128
		EP074-WF: Toluene	108-88-3	20 µg/L	106	72	132
EP074E: Halogenated Aliphatic Compounds (QCLot: 886761)							
EM1705994-008	GW73_11/5/17	EP074-WF: 1,1-Dichloroethene	75-35-4	20 µg/L	105	63	129
		EP074-WF: Trichloroethene	79-01-6	20 µg/L	93.7	64	126
EP074F: Halogenated Aromatic Compounds (QCLot: 886761)							
EM1705994-008	GW73_11/5/17	EP074-WF: Chlorobenzene	108-90-7	20 µg/L	112	81	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 886760)							
EM1705994-008	GW73_11/5/17	EP080: C6 - C9 Fraction	----	280 µg/L	86.3	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 886762)							
EM1705980-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	57.1	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 886760)							
EM1705994-008	GW73_11/5/17	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	82.3	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 886762)							
EM1705980-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	61.2	44	122
EP080: BTEXN (QCLot: 886760)							
EM1705994-008	GW73_11/5/17	EP080: Benzene	71-43-2	20 µg/L	98.4	68	130
		EP080: Toluene	108-88-3	20 µg/L	99.7	72	132
EP080: BTEXN (QCLot: 886762)							
EM1705980-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	78.2	68	130
		EP080: Toluene	108-88-3	20 µg/L	77.5	72	132
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 886131)							
EM1705888-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	113	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	76.2	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	94.4	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	86.8	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	97.6	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	85.0	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 886131)							
EM1705888-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	70.0	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	97.8	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	67.0	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	84.4	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	92.8	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	79.6	50	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 886131) - continued							
EM1705888-001	Anonymous	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	75.2	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	86.0	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	78.2	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.5 µg/L	93.4	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	85.9	50	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 886131)							
EM1705888-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	81.0	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	66.9	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	79.5	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	1.25 µg/L	81.6	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	118	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	91.2	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	92.8	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 886131)							
EM1705888-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	66.0	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	96.0	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	80.6	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	78.2	50	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1705994	Page	: 1 of 19
Amendment	: 1		
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 12-May-2017
Site	: Fishermans Bend	Issue Date	: 02-Jun-2017
Sampler	: JM, MW	No. of samples received	: 30
Order number	: 60537182 3.5	No. of samples analysed	: 23

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.
- Laboratory Control outliers exist - please see following pages for full details.
- 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
Laboratory Control Spike (LCS) Recoveries							
EP074D: Fumigants	QC-886761-001	----	1,2-Dibromoethane (EDB)	106-93-4	119 %	81-116%	Recovery greater than upper control limit
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EM1705994--001	GW77_10/5/17	Sulfate as SO4 - Turbidimetric	14808-79-8	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							
GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	----	----	----	15-May-2017	10-May-2017	5
Clear Plastic Bottle - Natural							
GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	----	----	----	15-May-2017	11-May-2017	4
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
GW62_11/5/17		----	----	----	15-May-2017	13-May-2017	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	18	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	18	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	20	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) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	10-May-2017	*
Clear Plastic Bottle - Natural (EA005-P) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	15-May-2017	11-May-2017	*
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	17-May-2017	✓
Clear Plastic Bottle - Natural (EA015H) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	15-May-2017	18-May-2017	✓
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	24-May-2017	✓
Clear Plastic Bottle - Natural (ED037-P) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	15-May-2017	25-May-2017	✓



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) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	16-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Natural (ED041G) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	16-May-2017	08-Jun-2017	✓
ED043: Total Oxidised Sulfur as SO4 2-								
Clear Plastic Bottle - Natural (ED043) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	18-May-2017	07-Jun-2017	✓	18-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Natural (ED043) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	18-May-2017	08-Jun-2017	✓	18-May-2017	08-Jun-2017	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	16-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Natural (ED045G) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	16-May-2017	08-Jun-2017	✓



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 - Natural (ED093F) MW9AI_11/5/17	11-May-2017	----	----	----	16-May-2017	18-May-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW77_10/5/17, GW76_10/5/17, GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	16-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, GMW03_11/5/17, GW62_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17	11-May-2017	----	----	----	16-May-2017	08-Jun-2017	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Natural (EG020A-F) MW9AI_11/5/17	11-May-2017	----	----	----	15-May-2017	07-Nov-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW77_10/5/17, GW76_10/5/17, GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	06-Nov-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, GMW03_11/5/17, GW62_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17	11-May-2017	----	----	----	15-May-2017	07-Nov-2017	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) GW77_10/5/17, GW76_10/5/17, GW74_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	06-Nov-2017	✓	15-May-2017	06-Nov-2017	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17, GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17	11-May-2017	15-May-2017	07-Nov-2017	✓	15-May-2017	07-Nov-2017	✓



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 - Natural (EG035F) MW9AI_11/5/17	11-May-2017	----	----	----	16-May-2017	08-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW77_10/5/17, GW76_10/5/17, GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	16-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, GMW03_11/5/17, GW62_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17	11-May-2017	----	----	----	16-May-2017	08-Jun-2017	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) GW77_10/5/17, GW76_10/5/17, GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	17-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17, GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17	11-May-2017	----	----	----	17-May-2017	08-Jun-2017	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P) GW77_10/5/17, GW76_10/5/17, GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	07-Jun-2017	✓
Clear Plastic Bottle - Natural (EK040P) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	15-May-2017	08-Jun-2017	✓



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) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	07-Jun-2017	✔
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	15-May-2017	08-Jun-2017	✔
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	12-May-2017	12-May-2017	✔
Clear Plastic Bottle - Natural (EK057G) GW73_11/5/17, DAMW5_02_11/5/17	GMW03_11/5/17,	11-May-2017	----	----	----	12-May-2017	13-May-2017	✔
Clear Plastic Bottle - Natural (EK057G) GW62_11/5/17		11-May-2017	----	----	----	15-May-2017	13-May-2017	✘
Clear Plastic Bottle - Natural (EK057G) GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	12-May-2017	13-May-2017	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	15-May-2017	07-Jun-2017	✔
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	15-May-2017	08-Jun-2017	✔



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) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	12-May-2017	12-May-2017	✓
Clear Plastic Bottle - Natural (EK071G) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	12-May-2017	13-May-2017	✓
EP005: Total Organic Carbon (TOC)								
Amber TOC Vial - Sulfuric Acid (EP005) GW73_11/5/17,	GW62_11/5/17	11-May-2017	----	----	----	19-May-2017	08-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP005) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	----	----	----	19-May-2017	07-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP005) GMW03_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17,	DAMW5_02_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	----	----	----	19-May-2017	08-Jun-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17		10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17,	11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17		10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17,	11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓



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
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17, 11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17, 11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17, 11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17, 11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, DAMW5_02_11/5/17, GW41_11/5/17, QC101_11/5/17	GMW03_11/5/17, MW9AI_11/5/17, GW48_11/5/17, 11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓



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
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW77_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW73_11/5/17, GMW03_11/5/17, DAMW5_02_11/5/17, MW9AI_11/5/17, GW41_11/5/17, GW48_11/5/17, QC101_11/5/17	11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) GW77_10/5/17, GW74_10/5/17, GW76_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	17-May-2017	✓	16-May-2017	24-Jun-2017	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) GW73_11/5/17, GMW03_11/5/17, DAMW5_02_11/5/17, GW62_11/5/17, GMW83_11/5/17, MW9AI_11/5/17, MW1371_02_11/5/17, GW51_11/5/17, GW41_11/5/17, GW48_11/5/17, GW53_11/5/17, QC101_11/5/17	11-May-2017	15-May-2017	18-May-2017	✓	16-May-2017	24-Jun-2017	✓



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) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	17-May-2017	✓	16-May-2017	24-Jun-2017	✓
Amber Glass Bottle - Unpreserved (EP071) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17	11-May-2017	15-May-2017	18-May-2017	✓	16-May-2017	24-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC14, QC12	QC15,	11-May-2017	15-May-2017	25-May-2017	✓	15-May-2017	25-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17, QC105_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17, QC13	11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓



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 Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	17-May-2017	✓	16-May-2017	24-Jun-2017	✓
Amber Glass Bottle - Unpreserved (EP071)								
GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17	11-May-2017	15-May-2017	18-May-2017	✓	16-May-2017	24-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC14, QC12	QC15,	11-May-2017	15-May-2017	25-May-2017	✓	15-May-2017	25-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17, QC105_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17, QC13	11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
GW77_10/5/17, GW76_10/5/17,	GW74_10/5/17, GW42AC_10/5/17	10-May-2017	15-May-2017	24-May-2017	✓	19-May-2017	24-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC14, QC12	QC15,	11-May-2017	15-May-2017	25-May-2017	✓	15-May-2017	25-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
GW73_11/5/17, DAMW5_02_11/5/17, GMW83_11/5/17, MW1371_02_11/5/17, GW41_11/5/17, GW53_11/5/17, QC103_11/5/17, QC105_11/5/17,	GMW03_11/5/17, GW62_11/5/17, MW9AI_11/5/17, GW51_11/5/17, GW48_11/5/17, QC101_11/5/17, QC104_11/5/17, QC13	11-May-2017	15-May-2017	25-May-2017	✓	19-May-2017	25-May-2017	✓



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	
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW73_11/5/17, GW51_11/5/17,	DAMW5_02_11/5/17, GW41_11/5/17	11-May-2017	----	----	----	14-May-2017	07-Nov-2017	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) GW73_11/5/17, GW51_11/5/17,	DAMW5_02_11/5/17, GW41_11/5/17	11-May-2017	----	----	----	14-May-2017	07-Nov-2017	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) GW73_11/5/17, GW51_11/5/17,	DAMW5_02_11/5/17, GW41_11/5/17	11-May-2017	----	----	----	14-May-2017	07-Nov-2017	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW73_11/5/17, GW51_11/5/17,	DAMW5_02_11/5/17, GW41_11/5/17	11-May-2017	----	----	----	14-May-2017	07-Nov-2017	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) GW73_11/5/17, GW51_11/5/17,	DAMW5_02_11/5/17, GW41_11/5/17	11-May-2017	----	----	----	14-May-2017	07-Nov-2017	✓



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	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	3	17	17.65	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	28	10.71	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	4	37	10.81	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	18	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	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	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	4	36	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	17	11.76	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	28	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	37	5.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	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							
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	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	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	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	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	18	0.00	5.00	*	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	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	
Matrix Spikes (MS) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	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	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	36	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	8	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)
Ammonium as N	EK055G-NH ₄	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH ₃ G. 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)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. 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 SO ₄ DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. 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)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.
<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.



CHAIN OF CUSTODY

ALS Laboratory:
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CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS : <input checked="" type="checkbox"/> Standard TAT (List due date): (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		<input type="checkbox"/> Non Standard or urgent TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Melbourne		ALS QUOTE NO.:		COC SEQUENCE NUMBER (Circle)		Custody Seal Intact: No N/A	
PROJECT: Fishermans Bend				COC: ① 2 3 4 5 6 7		Freeze/Freezer packs present upon receipt: No N/A	
ORDER NUMBER: 60537182				OF: 1 2 ③ 4 5 6 7		Random Sample Temperature on Receipt: No	
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		RECEIVED BY:		Other comment:	
SAMPLER: NK/WW/m		SAMPLER MOBILE: 0452366608		RELINQUISHED BY:		RECEIVED BY: <i>Mark (Au)</i>	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME:		DATE/TIME: 12/5, 10:44	
Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com				DATE/TIME:			
Email Invoice to: Averyll.Coyne@Aecom.com							

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to 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 codes below	(refer to)	TOTAL CONTAINERS	pH, TDS, TOC	TRH (C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cu, Mg, K, Cl, HCO3, NO3, NO2, NH4, NH3, PO4, SO4, F and Mn)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.		
1	GW77-10/5/17	10/5/17	W			10	Y	X	X	Y	Y		X		X	X			PH EC 7.14, 834 µS/cm 6.94, 1182 µS/cm 7.30, 2215 µS/cm 18 lve collected - HOLD 5.39, 962.6 µS/cm	
2	GW74-10/5/17					10	X	X	Y	Y		Y	X		X	X				
3	GW76-10/5/17					10	X	X	Y	Y		Y	X		X	X				
4	GW42AC-10/5/17					11	X	X	Y	Y		X	X		X	X				
5	QC05-10/5/17					4														
6	QC06-10/5/17					4														
7	QC07					1														
8	GW73-11/5/17	11/5/17				12	X	X	X	X	X		X	X	X	X				7.02, 1060 µS/cm
9	GMW03-11/5/17					10	X	X	Y	Y			X		X	X				7.21, 938 µS/cm
10	DAMW5-02/4/5/17					12	X	X	X	Y	X		X	X	X	X				6.86, 988 µS/cm
11	QC08-11/5/17					4														
12	QC09-11/5/17					4														
TOTAL																				

Environmental Division
Melbourne
Work Order Reference
EM1705994



Telephone : + 61-3-8549 9000

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 C*
 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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WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3126 E: portkembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd

OFFICE: Melbourne

PROJECT:

ORDER NUMBER: 60537182

PROJECT MANAGER: Averyll Coyne

CONTACT PH: 0499 252 502

SAMPLER: NK/MW/JM

SAMPLER MOBILE:

COC emailed to ALS? (YES / NO)

EDD FORMAT (or default):

Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com

Email Invoice to: Averyll.Coyne@aceom.com

TURNAROUND REQUIREMENTS :

(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

Standard TAT (List due date):

Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7
 OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal intact: Yes No N/A
 Free ice/freeze packs presentation receipt: Yes No N/A
 Random Sample Temperature on Receipt: C
 Other comment:

RELINQUISHED BY:

DATE/TIME: 11/5/17 6:25

RECEIVED BY:

DATE/TIME:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME: 12/5 10:40

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Please note that QC101, QC103, QC104 are labelled as QC01, QC03, QC04 on the bottles. Additional information: Please label normal per COC

ALS USE	SAMPLE DETAILS			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).											Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.		
	MATRIX: SOLID (S) WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below	(refer to)	TOTAL CONTAINERS	PH, TDS, TOC	TRH (C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cu, Ni, Pb, NO2, NH4, Ni3, PO4, SO4 F and Mn)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Sr, Hg)	Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Sr, Hg)		TRH C6-C10	
13	GW62-11/5/17	11/5/17	W	Amber, green, vials x 3, red x 2 yellow, purple, orange		10	X	X	X	X	X	X	X		X	X			PH GC
14	GMW83-11/5/17					10	X	X	X	X	X	X	X		X	X			7.23 6810 us/cm
15	MW9A1-11/5/17					10	X	X	X	X	X	X	X		X	X			5.93 319 us/cm
16	MW1371-02-11/5/17					10	X	X	X	X	X	X	X		X	X			6.96 2240 us/cm
17	QC10-11/5/17				red, vials x 2, amber	4													6.16 1457 us/cm
18	QC11-11/5/17					4													
19	GW51-11/05/17					12	X	X	X	X	X	X	X		X	X			6.03, 3.86 mS/cm
20	GW41-11/05/17					12	X	X	X	X	X	X	X		X	X			7.03, 480 us/cm
21	GW48-11/05/17					10	X	X	X	X	X	X	X		X	X			6.6, 1770 us/cm
22	GW63-11/05/17					10	X	X	X	X	X	X	X		X	X			6.1, 1600 us/cm
23	QC101-11/05/17					10	X	X	X	X	X	X	X		X	X			
24	QC103-11/05/17					10	X	X	X	X	X	X	X		X	X			
TOTAL																			

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 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulphuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulphuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass;
 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

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WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkemps@alsglobal.com

CLIENT: AECOM Australia Pty Ltd	TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date): (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	FOR LABORATORY USE ONLY (Circle) Custody Seal intact? Yes No N/A Fragile / frozen / ice / dry / present upon receipt? Yes No N/A Random Sample temperature on Receipt? °C Other comment:
OFFICE: Melbourne	<input type="checkbox"/> Non Standard or urgent TAT (List due date):	
PROJECT:	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7
ORDER NUMBER: 60537182	PROJECT MANAGER: Averyll Coyne	CONTACT PH: 0499 252 502
SAMPLER: NK/MW/JM	SAMPLER MOBILE:	RELINQUISHED BY:
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):	RECEIVED BY:
Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com		DATE/TIME:
Email Invoice to: Averyll.Coyne@aceom.com		DATE/TIME:
RECEIVED BY:	RECEIVED BY:	RECEIVED BY: <i>KM Mc Ken</i>
		DATE/TIME: <i>12/5 10:40</i>

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: *Please note QC 104 is labelled as QC 04 on the bottles, please label man as per COC*

ALS USE	SAMPLE DETAILS		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
	MATRIX	SOLID(S)/WATER (W)	TYPE & PRESERVATIVE (codes below)	(refer to)	TOTAL CONTAINERS	pH, TDS, TOC	TRH(C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Ni, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg and Mn)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10	
25	QC104	11/5/17	W		7	X					X				X		
26	QC105	"	"		1											X	
27	QC13	"	"		1											X	Trip blank
28	QC14	"	"		1											X	Trip blank
29	QC15	"	"		1											X	Trip blank
30	QC12	11/5/17	W		1											X	
TOTAL																	

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 Sulphuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulphuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



Tailored Analytical Services & Charges - Waters

Parameter	ALS Code	Technique/ Method Reference	LOR (mg/L) (or as indicated)	No.	Price per Sample \$	Total (\$)
Ionic Balance suite						
pH	EA005	APHA 4500-H+ B	0.01 pH units	40	[REDACTED]	[REDACTED]
Total Dissolved Solids (TDS)	EA015H	APHA 2540 C	10			
Major Cations (Ca, Mg, Na, K)	ED093	APHA 3120	1			
Alkalinity Total Alkalinity as CaCO ₃ Bicarbonate as CaCO ₃ Carbonate as CaCO ₃ Hydroxide as CaCO ₃	ED037P	APHA 2320 B	1			
Sulphate - Total (Turbidimetric) as SO ₄	ED041	APHA 4500 SO4-E	1			
Chloride	ED045G	APHA 4500-Cl ⁻ -B	1			
Fluoride	EK040P	APHA 4500 F -C	0.1			
Ammonia as N	EK055G	APHA 4500 NH ₃ ⁻ - H	0.01			
Reactive Phosphorus	EK071G	APHA 4500 P - G	0.01			
Nitrate & Nitrite	NT-4	APHA 4500 NO ₃ -NO ₂	0.01			
Dissolved Metals -(field filtered) (As, Cd, Cr, Cu, Ni, Pb, Zn)	W-2F	USEPA 6020, ICP/MS	Cd-0.0001 Zn - 0.005 Others 0.001	40	[REDACTED]	[REDACTED]
Hg		CV/FIMS/ICP/MS	0.0001			
Additional metals, Al, Fe, Se, Mn	EG020F	ICP/MS	Al, Se - 0.01 Fe-0.05 Mn-0.001			
Total Oxidised Sulphur	ED043	In house	0.01			
Nitrite + Nitrate (NOx)	EK059	APHA VSI3 reduction 4500 NO ₃ +NO ₂ -B	0.01			
VOC Scan (68 analytes) with WF detection limits	EP074A-G-WF	USEPA 5030/8260 P&T-GC/MS	1-10ug/L	24	[REDACTED]	[REDACTED]
TRH(C6-C36 or 40)/BTEXN/ PAH	W-7	GC/FID, P&T- or HS-GC/MS,GC/MS-SIM	TPH:20-100ug/L; BTEXN: 1-5ug/L PAH: 0.5-1ug/L	40	[REDACTED]	[REDACTED]
TRH(C6-C10) / BTEXN	W-18	P&T-,GC/MS	TPH:20ug/L; BTEXN: 1-5ug/L	4	[REDACTED]	[REDACTED]
TRH(C6-C40)/BTEXN/8 metals (Total)	W-5T	GC/FID, P&T-GC/MS, ICP/MS, CV/FIMS	TRH: 20-100µg/L BTEXN:1-5µg/L Metals:0.0001-0.05	4	[REDACTED]	[REDACTED]
Total project cost for water samples (Ex GST):						[REDACTED]



CHAIN OF CUSTODY

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CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS : <input checked="" type="checkbox"/> Standard TAT (List due date): <small>(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)</small>		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Melbourne		<input type="checkbox"/> Non Standard or urgent TAT (List due date):		Custody Seal Intact? Yes No N/A	
PROJECT: Fishermans Bend		ALS QUOTE NO.:		Preserve / freeze vials present upon receipt? Yes No N/A	
ORDER NUMBER: 60537182				Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		Other comment:	
SAMPLER: NK/MW/M		SAMPLER MOBILE: 0452366605		RECEIVED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY: Averyll Coyne	
Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com		DATE/TIME:		DATE/TIME: 12/5, 10/2017	
Email Invoice to: Averyll.Coyne@Aecom.com		DATE/TIME:			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to 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 <small>codes below</small>	REFER TO	TOTAL CONTAINERS	pH, TDS, TOC	TRH(C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cu, Hg, Pb, Ni, Zn, Fe, Se, Hg)	PFAS - 28 analytes		Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10
	1	GW77-10/5/17	10/5/17	W			10	Y	X	X	Y	X		X		X	X		Environmental Division Melbourne NP 12/5 Work Order Reference EM1705994 Telephone: + 61-3-8549 9600
	2	GW74-10/5/17					10	X	X	Y	Y		Y	X		X	X		
	3	GW76-10/5/17					10	X	X	Y	Y		Y	X		X	X		
	4	GW42AC-10/5/17					11	X	X	Y	Y		X	X		X	X		
	5	QC05-10/5/17					4												
	6	QC06-10/5/17					4												
	7	QC07					1												
	8	GW73-11/5/17	11/5/17				12	X	X	X	X	X		X	X	X	X		
	9	GMW03-11/5/17					10	X	X	Y	Y		X	X		X	X		
	10	DAMW5-02-11/5/17					12	X	X	X	Y	X		X	X	X	X		
	11	QC08-11/5/17					4												
	12	QC09-11/5/17					4												
							TOTAL												

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 Glass;
 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:
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ADELAIDE 21 Burma Road Pooraka SA 5095
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Ph: 024423 2063 E: nowra@alsglobal.com

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Ph: 08 9209 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

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Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portKembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		<input type="checkbox"/> Standard TAT (List due date): <input type="checkbox"/> Non Standard or urgent TAT (List due date):		FOR LABORATORY USE ONLY (COC):	
OFFICE: Melbourne		ALS QUOTE NO.:		COC SEQUENCE NUMBER (Circle)		Custody Seal Intact? Yes No N/A Free ice / frozen ice bricks present (if applicable)? Yes No N/A Random Sample Temperature on Receipt: _____ Other comment: _____	
PROJECT:		ORDER NUMBER: 60537182		COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7			
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		RECEIVED BY:		RECEIVED BY:	
SAMPLER: NK/MW/JM		SAMPLER MOBILE:		DATE/TIME:		DATE/TIME:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		REINQUISHED BY:		REINQUISHED BY:	
Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com		Email Invoice to: Averyll.Coyne@aceom.com		DATE/TIME: 11/5/17 6:25		DATE/TIME: 12/5 10:40	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please note that QC101, QC103, QC104 are labelled as QC01, QC03, QC04 on the bottles. Additional information: Please label marks per COC

ALS USE	SAMPLE DETAILS			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			
	MATRIX: SOLID (S)/WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below (refer to)	TOTAL CONTAINERS	pH, TDS, TOC	TRH (C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cu, Ni, Pb, Se, Zn, Cr, Mn, K, Cl, Fe, NO3, NO2, NH4, Hg, HAs, PO4, SO4, F and In)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10				
	13	GW62-11/5/17	11/5/17	W	Amber, green, violet x3, red x2 yellow, purple, orange	10	X	X	X	X		X	X		X	X			pH EC 7.23 6810 us/cm	
	14	GMW83-11/5/17				10	X	X	X	X		X	X		X	X			5.93 319 us/cm	
	15	MW9A1-11/5/17				10	X	X	X	X		X	X		X	X			6.96 2240 us/cm	
	16	MW1371-02-11/5/17				10	X	X	X	X		X	X		X	X			6.16 1457 us/cm	
	17	QC10-11/5/17			red, vials x2, amber	4														
	18	QC11-11/5/17				4														
	19	GW51-110517				12	X	X	X	X		X	X		X	X			6.03, 3.86 mS/cm	
	20	GW41-110517				12	X	X	X	X		X	X		X	X			7.03, 480 µS/cm	
	21	GW48-110517				10	X	X	X	X		X	X		X	X			6.6, 1770 µS/cm	
	22	GW63-110517				10	X	X	X	X		X	X		X	X			6.1, 1600 µS/cm	
	23	QC101-110517				10	X	X	X	X		X	X		X	X				
	24	QC102-110517				10						X	X		X	X				
	TOTAL																			

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 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulphuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulphuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass;
 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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Ph: 07 4796 0500 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle) Custody Seal intact? Yes No N/A Froze / frozen ice packs present upon receipt? Yes No N/A Random Sample Temperature on Receipt: °C Other comment:	
OFFICE: Melbourne		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) <input type="checkbox"/> Non Standard or urgent TAT (List due date):			
PROJECT:		ALS QUOTE NO.:		COC SEQUENCE NUMBER (Circle)	
ORDER NUMBER: 60537182				COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7	
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502			
SAMPLER: NK/MW/JM		SAMPLER MOBILE:		RELINQUISHED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY:	
Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com		DATE/TIME:		DATE/TIME:	
Email Invoice to: Averyll.Coyne@aecom.com				RECEIVED BY: K. Mc Ken DATE/TIME: 12/5 10:00	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please note QC 104 is labelled as QC 04 on the bottles, please label men as per COC

ALS USE	SAMPLE DETAILS		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		
	MATRIX: SOLID (S)/WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PH, TDS, TOC	TRH(C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Co, Ni, K, Cl, HCO3, NO2, NO3, NH4, NiS, PO4, SO4, F and Mn)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)		Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10 BTEXN
	QC104	11/5/17	W		7		X				X				X		
	QC105	"	"		1											X	
	QC106	"	"		1											X	
	QC13	"	"													X	Trip blank
	QC14	"	"													X	Trip blank
	QC15	"	"													X	Trip blank
	QC12	11/5/17	"													X	
TOTAL																	

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 Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



Tailored Analytical Services & Charges - Waters

Parameter	ALS Code	Technique/ Method Reference	LOR (mg/L) (or as indicated)	No.	Price per Sample \$	Total (\$)
Ionic Balance suite						
pH	EA005	APHA 4500-H* B	0.01 pH units	40	[REDACTED]	[REDACTED]
Total Dissolved Solids (TDS)	EA015H	APHA 2540 C	10			
Major Cations (Ca, Mg, Na, K)	ED093	APHA 3120	1			
Alkalinity Total Alkalinity as CaCO ₃ Bicarbonate as CaCO ₃ Carbonate as CaCO ₃ Hydroxide as CaCO ₃	ED037P	APHA 2320 B	1			
Sulphate - Total (Turbidimetric) as SO ₄	ED041	APHA 4500 SO4-E	1			
Chloride	ED045G	APHA 4500-Cl -B	1			
Fluoride	EK040P	APHA 4500 F -C	0.1			
Ammonia as N	EK055G	APHA 4500 NH ₃ - H	0.01			
Reactive Phosphorus	EK071G	APHA 4500 P - G	0.01			
Nitrate & Nitrite	NT-4	APHA 4500 NO3-NO2	0.01			
Dissolved Metals -(field filtered) (As, Cd, Cr, Cu, Ni, Pb, Zn)	W-2F	USEPA 6020, ICP/MS	Cd-0.0001 Zn - 0.005 Others 0.001	40	[REDACTED]	[REDACTED]
Hg		CV/FIMS/ICP/MS	0.0001			
Additional metals, Al, Fe, Se, Mn	EG020F	ICP/MS	Al, Se - 0.01 Fe-0.05 Mn-0.001			
Total Oxidised Sulphur	ED043	In house	0.01			
Nitrite + Nitrate (NOx)	EK059	APHA VS13 reduction 4500 NO3+NO2-B	0.01			
VOC Scan (68 analytes) with WF detection limits	EP074A-G-WF	USEPA 5030/8260 P&T-GC/MS	1-10ug/L	24	[REDACTED]	[REDACTED]
TRH(C6-C36 or 40)/BTEXN/ PAH	W-7	GC/FID, P&T- or HS-GC/MS,GC/MS-SIM	TPH:20-100ug/L; BTEXN: 1-5ug/L PAH: 0.5-1ug/L	40	[REDACTED]	[REDACTED]
TRH(C6-C10) / BTEXN	W-18	P&T-,GC/MS	TPH:20ug/L; BTEXN: 1-5ug/L	4	[REDACTED]	[REDACTED]
TRH(C6-C40)/BTEXN/8 metals (Total)	W-5T	GC/FID, P&T-GC/MS, ICP/MS, CV/FIMS	TRH: 20-100µg/L BTEXN:1-5µg/L Metals:0.0001-0.05	4	[REDACTED]	[REDACTED]
Total project cost for water samples (Ex GST):						[REDACTED]

Larissa Burns

Subject: FW: EM1705994 - AECOMAU - 60537182

From: Kaur, Navjot [mailto:Navjot.Kaur@aecom.com]

Sent: Monday, 15 May 2017 4:38 PM

To: Coyne, Averyll <Averyll.Coyne@aecom.com>; Peter Ravlic <peter.ravlic@alsglobal.com>

Cc: Williams, Megan <Megan.Williams@aecom.com>; Muller, Jacob <Jacob.Muller@aecom.com>

Subject: RE: EM1705994 - AECOMAU - 60537182

Hi Peter

Here are the pH and temp for some of the samples. The remaining ones, we will collate it tomorrow morning and send them to you.

For the vials, we did not receive the TOC vials, so we are using the BTEX vials only.

EM1705994

Well ID	pH	Temp
GW81	6.87	19.6
GW80	6.29	19
GW67	7.38	19.2
GW43	5.89	18.9
GW82		
GW57	6.13	18.6
1 GW77		
2 GW74		
3 GW76		
4 GW42AC	5.39	18.5
5 GW73	7.02	22.1
9 GMW03	7.21	21.1
10 DAMW5_02	6.86	19.6
13 GW62		
14 GMW83		
15 MW9A1		
16 MW1371_02		
19 GW51	6.03	18
20 GW41	7.03	19.5
21 GW48	6.6	20
22 GW53	6.1	19
GW52	6.61	17.2
GW40A/C	4.69	19.8
GW72	6.25	20.8
GW75	6.04	19.5
GMW02		
MW1333_02		

Regards

Navjot Kaur

Senior Environmental Scientist

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From: Coyne, Averyll
Sent: Monday, 15 May 2017 2:29 PM
To: Peter Ravlic
Cc: Kaur, Navjot; Williams, Megan; Muller, Jacob
Subject: RE: EM1705994 - AECOMAU - 60537182
Importance: High

Hi Peter,

Thank you for the email. There is no need to analyse for DOC, just TOC. Please prioritise all volatile analysis before TOC if you find there is limited water for analysis.

I will provide your comments below to our field staff.

Navjot is currently following up on the temperature information for you. I believe you need the temperature data for all of the samples sent to date.

Kind Regards
Averyll

Averyll Coyne
Principal Environmental Scientist
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Averyll.Coyne@aecom.com

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From: Peter Ravlic [<mailto:peter.ravlic@alsglobal.com>]
Sent: Monday, 15 May 2017 2:23 PM
To: Coyne, Averyll
Subject: EM1705994 - AECOMAU - 60537182

Hi Averyll

In relation to the attached samples we rec'd, we have rec'd a number of TOC vials (noted below) which have been note on the vial as filtered which would mean that the vials are now DOC vials and not TOC vials.

001-004, 009-10, 014-15, 021-23 → Field filtered for TOC (logged as DOC vials)

Did you need DOC analysed for these filtered vials instead?

As we have rec'd 2 vials for volatiles, we will need to use one of these for TOC instead

Can you also please chase up the temperature data and all field data for sample 023 as we need the pH and Temp data for NH4 calculation

Thanks

Regards

Peter Ravlic

Client Services Officer – Springvale

Environmental



T +61 3 8549 9600

F +61 3 8549 9626

Peter.Ravlic@alsglobal.com

2-4 Westall Rd

Springvale Vic 3171

Australia

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WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS : <input checked="" type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (GIRB)	
OFFICE: Melbourne		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) <input type="checkbox"/> Non Standard or urgent TAT (List due date):			
PROJECT: Fishermans Bend		ALS QUOTE NO.:		COC SEQUENCE NUMBER (Circle)	
ORDER NUMBER: 60537182				COC: 1 2 3 4 5 6 7	
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		OF: 1 2 3 4 5 6 7	
SAMPLER: NKM/WJM		SAMPLER MOBILE: 0452366608		RECEIVED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RELINQUISHED BY:	
Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com				DATE/TIME:	
Email Invoice to: Averyll.Coyne@acoom.com				RECEIVED BY: <i>Navjot Kaur</i>	
				DATE/TIME: 12/5, 10:40	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)										Additional Information		
	MATRIX: SOLID (S) WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below	(refer to)	TOTAL CONTAINERS	pH, TDS, TOC	TRH(C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cu, HCO ₃ , Ni, NO ₂ , NiH ₄ , Ni ₃ , PO ₄ , SO ₄ , F and Mn)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)		Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10
	GW77-10/5/17	10/5/17	W			10	X	X	X	X		X			X	X		<p>PH EC</p> <p>7.14, 834 μS/cm</p> <p>6.94, 1182 μS/cm</p> <p>7.30, 2215 μS/cm</p> <p>1 Blue collected - HOLD</p> <p>5.39, 962.6 μS/cm</p> <p>7.02, 1060 μS/cm</p> <p>7.21, 938 μS/cm</p> <p>6.86, 988 μS/cm</p>
	GW74-10/5/17					10	X	X	X		Y	X			X	X		
	GW76-10/5/17					10	X	X	X		Y	X			X	X		
	GW42AC-10/5/17					11	X	X	X		X	X			X	X		
	QC05-10/5/17					4												
	QC06-10/5/17					4												
	QC07					1												
	GW73-11/5/17	11/5/17				12	X	X	X	X		X		X	X	X		
	GMW03-11/5/17					0	X	X	X	X		X		X	X	X		
	DAMW5-02-4/5/17					12	X	X	X	X		X		X	X	X		
	QC08-11/5/17					4												
	QC09-11/5/17					4												
TOTAL																		

Environmental Division
Melbourne
Work Order Reference
EM1705994



Telephone : +61-3-8549 9600

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 Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



Environmental

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please tick →

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MELBOURNE 2-4 Westall Road Springvale VIC 3171
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MUDGEEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com
PERTH 10 Had Way Malaga WA 6060
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portKembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd OFFICE: Melbourne PROJECT: ORDER NUMBER: 60537182 PROJECT MANAGER: Averyll Coyne CONTACT PH: 0499 252 502 SAMPLER: NK/MW/JM SAMPLER MOBILE: COC emailed to ALS? (YES / NO) EDD FORMAT (or default): Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com Email Invoice to: Averyll.Coyne@aecom.com		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date): (Standard TAT may be longer for some tests e.g. Ultra Trace Organics) <input type="checkbox"/> Non Standard or urgent TAT (List due date): ALS QUOTE NO.: COC SEQUENCE NUMBER (Circle) COC: 1 (2) 3 4 5 6 7 OF: 1 2 (3) 4 5 6 7		FOR LABORATORY USE ONLY (Circle) Custody Seal intact: Yes No N/A Fragile / Shatter / Ice Bricks present (if not): Yes No N/A Random Sample Temperature on Receipt: <input type="checkbox"/> Other comment:	
RELINQUISHED BY: DATE/TIME: 11/5/17 6:25		RECEIVED BY: DATE/TIME:		RELINQUISHED BY: RECEIVED BY: DATE/TIME: 12/5 10:40	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please note that QC101, QC103, QC104 are labelled as QCO1, QCO3, QCO4 on the bottles. Additional information please label normal per COC

ALS USE	SAMPLE ID	DATE / TIME	MATRIX	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).														TRH C6-C10	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
					TYPE & PRESERVATIVE codes below	(refer to)	TOTAL CONTAINERS	pH, TDS, TOC	TRH(C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cr, Hg, Ni, Pb, Se, Zn, Ni, Zn, Ni, Zn, Al, Fe, Sb, Hg)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Sb, Hg)	Total Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Sb, Hg)					
	GW62-11/5/17	11/5/17	W	Amber, green, vials x 3, red x 2 yellow, purple, orange			10	X	X	X	X		X	X	X	X	X	X	X	7.23 pH EC 6810 us/cm		
	GMW83-11/5/17						10	X	X	X	X		X	X	X	X	X	X	X	5.98 319 us/cm		
	MW9A1-11/5/17						10	X	X	X	X		X	X	X	X	X	X	X	6.96 2240 us/cm		
	MW1371-02-11/5/17						10	X	X	X	X		X	X	X	X	X	X	X	6.16 1457 us/cm		
	QC10-11/5/17						4															
	QC11-11/5/17						4															
	GW51-11/5/17						12	X	X	X	X		X	X	X	X	X	X	X	6.03 , 3.86 mS/cm		
	GW41-11/5/17						12	X	X	X	X		X	X	X	X	X	X	X	7.03 , 480 µS/cm		
	GW48-11/5/17						10	X	X	X	X		X	X	X	X	X	X	X	6.6 , 1770 µS/cm		
	GW93-11/5/17						10	X	X	X	X		X	X	X	X	X	X	X	6.1 , 1600 µS/cm		
	QC101-11/5/17						10	X	X	X	X		X	X	X	X	X	X	X			
	QC102-11/5/17						7		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 Sulphuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulphuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass;
 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:
please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Caffemondah Drive Clinton QLD 4660
Ph: 07 7471 5600 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740
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TOWNSVILLE 14-15 Deama Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 90 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembbla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date): (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		FOR LABORATORY USE ONLY (Circle): Custody Seal intact? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Fridge / freezer / Dry Ice / Ambient receipt? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Random Sample Temperature on Receipt: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Other comment:	
OFFICE: Melbourne		<input type="checkbox"/> Non Standard or urgent TAT (List due date):		COC SEQUENCE NUMBER (Circle): COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7	
PROJECT:		ALS QUOTE NO.:			
ORDER NUMBER: 60537182					
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502			
SAMPLER: NK/MW/JM		SAMPLER MOBILE:		RELINQUISHED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY:	
Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com				DATE/TIME:	
Email Invoice to: Averyll.Coyne@aceom.com				DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please note QC 104 is labelled as DC 04 on the bottles, please label man as per COC

ALS USE	SAMPLE DETAILS		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
	MATRIX: SOLID (S) WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	pH, TDS, TOC	TRH(C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cu, Mg, K, Cl, HCO3, NO3, NO2, NH4, Ni, Hg, PO4, SO4, F and Br)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10 BTEXN	
	QC104-110517	11/5/17	W		7		X				X				X		
	QC105-110517	"	"		1												X
	QC106-110517	"	"		1												X
	QC 13	"	"														X Trip blank
	QC 14	"	"														X Trip blank
	QC 15	"	"														X Trip blank
	QC 12	11/5/17	"														X
TOTAL																	

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 Sulphuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulphuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solis; B = Unpreserved Bag.



Tailored Analytical Services & Charges - Waters

Parameter	ALS Code	Technique/ Method Reference	LOR (mg/L) (or as indicated)	No.	Price per Sample \$	Total (\$)
Ionic Balance suite						
pH	EA005	APHA 4500-H* B	0.01 pH units	40	[REDACTED]	[REDACTED]
Total Dissolved Solids (TDS)	EA015H	APHA 2540 C	10			
Major Cations (Ca, Mg, Na, K)	ED093	APHA 3120	1			
Alkalinity Total Alkalinity as CaCO ₃ Bicarbonate as CaCO ₃ Carbonate as CaCO ₃ Hydroxide as CaCO ₃	ED037P	APHA 2320 B	1			
Sulphate - Total (Turbidimetric) as SO ₄	ED041	APHA 4500 SO4-E	1			
Chloride	ED045G	APHA 4500-Cl ⁻ -B	1			
Fluoride	EK040P	APHA 4500 F -C	0.1			
Ammonia as N	EK055G	APHA 4500 NH ₃ - H	0.01			
Reactive Phosphorus	EK071G	APHA 4500 P - G	0.01			
Nitrate & Nitrite	NT-4	APHA 4500 NO3-NO2	0.01			
Dissolved Metals -(field filtered) (As, Cd, Cr, Cu, Ni, Pb, Zn)	W-2F	USEPA 6020, ICP/MS	Cd-0.0001 Zn - 0.005 Others 0.001	40	[REDACTED]	[REDACTED]
Hg		CV/FIMS/ICP/MS	0.0001			
Additional metals, Al, Fe, Se, Mn	EG020F	ICP/MS	Al, Se - 0.01 Fe-0.05 Mn-0.001			
Total Oxidised Sulphur	ED043	In house	0.01			
Nitrite + Nitrate (NOx)	EK059	APHA VS13 reduction 4500 NO3+NO2-B	0.01			
VOC Scan (68 analytes) with WF detection limits	EP074A-G-WF	USEPA 5030/8260 P&T-GC/MS	1-10ug/L	24	[REDACTED]	[REDACTED]
TRH(C6-C36 or 40)/BTEXN/ PAH	W-7	GC/FID, P&T- or HS-GC/MS,GC/MS-SIM	TPH:20-100ug/L; BTEXN: 1-5ug/L PAH: 0.5-1ug/L	40	[REDACTED]	[REDACTED]
TRH(C6-C10) / BTEXN	W-18	P&T-,GC/MS	TPH:20ug/L; BTEXN: 1-5ug/L	4	[REDACTED]	[REDACTED]
TRH(C6-C40)/BTEXN/8 metals (Total)	W-5T	GC/FID, P&T-GC/MS, ICP/MS, CV/FIMS	TRH: 20-100µg/L BTEXN:1-5µg/L Metals:0.0001-0.05	4	[REDACTED]	[REDACTED]
Total project cost for water samples (Ex GST):						[REDACTED]

Larissa Burns

Subject: FW: EM1705994 - AECOMAU - 60537182

From: Kaur, Navjot [<mailto:Navjot.Kaur@aecom.com>]
Sent: Monday, 15 May 2017 4:38 PM
To: Coyne, Averyll <Averyll.Coyne@aecom.com>; Peter Ravlic <peter.ravlic@alsglobal.com>
Cc: Williams, Megan <Megan.Williams@aecom.com>; Muller, Jacob <Jacob.Muller@aecom.com>
Subject: RE: EM1705994 - AECOMAU - 60537182

Hi Peter

Here are the pH and temp for some of the samples. The remaining ones, we will collate it tomorrow morning and send them to you.

For the vials, we did not receive the TOC vials, so we are using the BTEX vials only.

EM1705994

Well ID	pH	Temp
GW81	6.87	19.6
GW80	6.29	19
GW67	7.38	19.2
GW43	5.89	18.9
GW82		
GW57	6.13	18.6
1 GW77		
2 GW74		
3 GW76		
4 GW42AC	5.39	18.5
5 GW73	7.02	22.1
9 GMW03	7.21	21.1
10 DAMW5_02	6.86	19.6
13 GW62		
14 GMW83		
15 MW9A1		
16 MW1371_02		
19 GW51	6.03	18
20 GW41	7.03	19.5
21 GW48	6.6	20
22 GW53	6.1	19
GW52	6.61	17.2
GW40A/C	4.69	19.8
GW72	6.25	20.8
GW75	6.04	19.5
GMW02		
MW1333_02		

Regards
Navjot Kaur
Senior Environmental Scientist
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Navjot.Kaur@aecom.com

AECOM

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From: Coyne, Averyll
Sent: Monday, 15 May 2017 2:29 PM
To: Peter Ravlic
Cc: Kaur, Navjot; Williams, Megan; Muller, Jacob
Subject: RE: EM1705994 - AECOMAU - 60537182
Importance: High

Hi Peter,

Thank you for the email. There is no need to analyse for DOC, just TOC. Please prioritise all volatile analysis before TOC if you find there is limited water for analysis.

I will provide your comments below to our field staff.

Navjot is currently following up on the temperature information for you. I believe you need the temperature data for all of the samples sent to date.

Kind Regards
Averyll

Averyll Coyne

Principal Environmental Scientist
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Averyll.Coyne@aecom.com

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From: Peter Ravlic [<mailto:peter.ravlic@alsglobal.com>]
Sent: Monday, 15 May 2017 2:23 PM
To: Coyne, Averyll
Subject: EM1705994 - AECOMAU - 60537182

Hi Averyll

In relation to the attached samples we rec'd, we have rec'd a number of TOC vials (noted below) which have been note on the vial as filtered which would mean that the vials are now DOC vials and not TOC vials.

001-004, 009-10, 014-15, 021-23 → Field filtered for TOC (logged as DOC vials)

Did you need DOC analysed for these filtered vials instead?

As we have rec'd 2 vials for volatiles, we will need to use one of these for TOC instead

Can you also please chase up the temperature data and all field data for sample 023 as we need the pH and Temp data for NH4 calculation

Thanks

Regards

Peter Ravlic

Client Services Officer – Springvale

Environmental



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Springvale Vic 3171

Australia

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

Larissa Burns

Subject: FW: EM1705994 - AECOMAU - 60537182

From: Kaur, Navjot [<mailto:Navjot.Kaur@aecom.com>]

Sent: Wednesday, 17 May 2017 12:47 PM

To: Peter Ravlic <peter.ravlic@alsglobal.com>; Coyne, Averyll <Averyll.Coyne@aecom.com>

Cc: Williams, Megan <Megan.Williams@aecom.com>; Muller, Jacob <Jacob.Muller@aecom.com>

Subject: RE: EM1705994 - AECOMAU - 60537182

Hi Peter

See below for the missing pH and temp

Well ID	pH	Temp
GW81	6.87	19.6
GW80	6.29	19
GW67	7.38	19.2
GW43	5.89	18.9
GW82	6.32	18.9
GW57	6.13	18.6
1 GW77	7.14	19.8
2 GW74	6.94	22.2
3 GW76	7.3	21.8
GW42AC	5.39	18.5
GW73	7.02	22.1
GMW03	7.21	21.1
DAMW5_02	6.86	19.6
13 GW62	7.23	17.7
14 GMW83	5.93	19.9
15 MW9A1	9.96	21.7
16 MW1371_02	6.16	19.2
GW51	6.03	18
GW41	7.03	19.5
GW48	6.6	20
GW53	6.1	19
GW52	6.61	17.2
GW40A/C	4.69	19.8
GW72	6.25	20.8
GW75	6.04	19.5
GMW02	7.16	17.5
MW1333_02	6.85	20.1
23 QC101_110517	6.60	20.0
QC106_120517	6.61	17.2

Regards

Navjot Kaur

Senior Environmental Scientist

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Navjot.Kaur@aecom.com

AECOM

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CERTIFICATE OF ANALYSIS

Work Order : **EM1706071**
Client : **AECOM Australia Pty Ltd**
Contact : **MS AVERYLL COYNE**
Address : **COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET
MELBOURNE VIC, AUSTRALIA 3004**
Telephone : **+61 03 9653 1234**
Project : **60537182**
Order number : **60537182 3.5**
C-O-C number : **----**
Sampler : **nk/mw/jm**
Site : **Fishermans Bend**
Quote number : **ME/199/16**
No. of samples received : **11**
No. of samples analysed : **11**

Page : 1 of 20
Laboratory : Environmental Division Melbourne
Contact : Carol Walsh
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9608
Date Samples Received : 15-May-2017 11:20
Date Analysis Commenced : 16-May-2017
Issue Date : 22-May-2017 16:56



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Herman Lin	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, 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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020F&T: Filtered and total nickel results for EM1706071-005 have been confirmed by re-preparation and re-analysis.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- 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	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.86	5.07	6.48	6.27	7.20	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1040	3830	580	616	663	
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	436	40	352	338	325	
Total Alkalinity as CaCO3	----	1	mg/L	436	40	352	338	325	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	213	1840	97	180	5	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	244	2350	153	233	10	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	254	776	25	18	202	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	64	419	128	122	73	
Magnesium	7439-95-4	1	mg/L	37	154	13	25	22	
Sodium	7440-23-5	1	mg/L	286	725	36	51	126	
Potassium	7440-09-7	1	mg/L	12	12	6	12	13	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.32	1.73	0.05	0.04	0.04	
Arsenic	7440-38-2	0.001	mg/L	0.010	0.002	0.015	0.006	0.008	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.008	0.002	<0.001	<0.001	0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	0.007	<0.001	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	0.002	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.033	0.640	0.337	0.135	0.120	
Nickel	7440-02-0	0.001	mg/L	0.014	0.103	0.012	0.007	0.143	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.013	0.433	0.013	0.026	0.040	
Iron	7439-89-6	0.05	mg/L	1.21	2.84	10.8	0.72	3.58	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	4.06	10.0	3.28	1.48	2.24	
Arsenic	7440-38-2	0.001	mg/L	0.015	0.010	0.024	0.011	0.023	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0004	0.0003	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.022	0.019	0.015	0.004	0.008	
Copper	7440-50-8	0.001	mg/L	0.004	0.017	0.016	0.017	0.010	
Nickel	7440-02-0	0.001	mg/L	0.018	0.110	0.018	0.010	0.113	
Lead	7439-92-1	0.001	mg/L	0.004	0.009	0.009	0.068	0.030	
Zinc	7440-66-6	0.005	mg/L	0.033	0.459	0.138	0.363	0.114	
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	4.68	10.5	18.6	3.57	10.4	
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.1	0.2	0.3	0.2	0.2	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.75	1.05	2.89	1.03	3.04	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.75	1.05	2.89	1.03	3.02	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.01	<0.01	0.07	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.01	6.84	4.91	6.51	0.06	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	6.85	4.91	6.58	0.06	
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	0.02	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	20.3	61.0	9.76	11.0	12.3	
Total Cations	----	0.01	meq/L	19.0	65.4	9.18	10.7	11.3	
Ionic Balance	----	0.01	%	3.37	3.50	3.07	1.56	4.37	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	39	13	8	4	14	
EP074A: Monocyclic Aromatic Hydrocarbons									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Benzene	71-43-2	1	µg/L	8	----	----	<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	----	
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	<10	----	----	<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	<1	----	----	<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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	3	----	----	<1	----	
cis-1.2-Dichloroethene	156-59-2	1	µg/L	20	----	----	<1	----	
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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
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	----	
[^] Total Trihalomethanes	----	1	µg/L	<1	----	----	<1	----	
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L	<5	----	----	<5	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	<1.0	3.5	<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	1.4	<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	1.9	<1.0	
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	<1.0	1.8	<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	1.2	<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	1.1	<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	10.9	<0.6	
[^] Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	1.2	<0.6	
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	60	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	260	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
[^] C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	320	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	20	<20	<20	<20	<20	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	220	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	100	<100	220	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	7	<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	7	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	0.05	<0.02	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	0.11	<0.02	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	<0.01	<0.01	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	<0.02	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	<0.1	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	<0.02	<0.02	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	<0.01	<0.01	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	<0.05	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	<0.02	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	<0.02	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	<0.02	----	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	<0.05	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	<0.05	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	<0.05	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	<0.05	----	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	0.16	<0.01	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	0.11	<0.01	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	0.16	<0.01	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	99.1	----	----	92.8	----	
Toluene-D8	2037-26-5	1	%	110	----	----	94.3	----	
4-Bromofluorobenzene	460-00-4	1	%	122	----	----	102	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	27.3	30.2	31.0	29.1	37.2	
2-Chlorophenol-D4	93951-73-6	1	%	76.5	82.3	78.4	75.5	81.7	
2,4,6-Tribromophenol	118-79-6	1	%	84.7	90.0	74.1	74.4	83.3	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	71.5	78.9	74.7	71.7	79.0	
Anthracene-d10	1719-06-8	1	%	85.2	88.8	79.7	76.4	85.1	
4-Terphenyl-d14	1718-51-0	1	%	90.7	89.2	76.8	75.0	87.3	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	90.5	90.3	84.6	84.7	91.0	
Toluene-D8	2037-26-5	2	%	105	100	96.6	90.4	100	
4-Bromofluorobenzene	460-00-4	2	%	122	120	114	110	118	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	67.8	68.1	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time		12-May-2017 00:00		12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.04	6.90	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	1140	1030	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	459	428	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	459	428	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	214	----	----	----
ED043: Total Oxidised Sulfur as SO4 2-								
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	15	252	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	482	245	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	100	63	----	----	----
Magnesium	7439-95-4	1	mg/L	43	37	----	----	----
Sodium	7440-23-5	1	mg/L	284	291	----	----	----
Potassium	7440-09-7	1	mg/L	13	13	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.03	0.30	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.004	0.010	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	0.003	0.008	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.243	0.033	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.046	0.012	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.010	0.011	----	----	----
Iron	7439-89-6	0.05	mg/L	1.86	1.21	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	6.19	4.39	----	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L	0.012	0.015	----	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.022	0.023	----	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.008	0.004	----	<0.001	<0.001	
Nickel	7440-02-0	0.001	mg/L	0.066	0.018	----	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	0.010	0.004	----	<0.001	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.096	0.034	----	<0.005	<0.005	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	14.9	4.80	----	<0.05	<0.05	
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	<0.0001	<0.0001	----	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.5	0.1	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	5.40	0.76	----	----	----	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	5.38	0.76	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.18	<0.01	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.18	<0.01	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.02	<0.01	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	22.8	19.9	----	----	----	
Total Cations	----	0.01	meq/L	21.2	19.2	----	----	----	
Ionic Balance	----	0.01	%	3.53	1.89	----	----	----	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	27	33	----	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Benzene	71-43-2	1	µg/L	<1	7	----	----	----	
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	----	----	----	
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	<10	<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	<1	<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	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	2	----	----	----	
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	19	----	----	----	
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	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
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	----	----	----	
^ Total Trihalomethanes	----	1	µg/L	<1	<1	----	----	----	
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	----	----	----	
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	----	----	----	
Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	----	----	----	
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	----	----	----	
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	----	----	----	
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	----	----	----	
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	----	----	----	
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	----	----	----	
Benzo(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	----	----	----	
Chrysene	218-01-9	1	µg/L	<1.0	<1.0	----	----	----	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	----	----	----	
Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	----	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	----	----	----	
Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	----	----	----	
Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	----	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<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	70	<50	----	<50	<50	
C15 - C28 Fraction	----	100	µg/L	370	<100	----	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	440	<50	----	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	20	<20	<20	<20	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	110	<100	----	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	340	<100	----	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	450	<100	----	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	110	<100	----	<100	<100	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	6	<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	6	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	106	94.9	----	----	----	----
Toluene-D8	2037-26-5	1	%	119	99.1	----	----	----	----
4-Bromofluorobenzene	460-00-4	1	%	119	105	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	29.7	31.1	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1	%	79.8	85.4	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1	%	92.7	90.9	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	80.2	79.6	----	----	----	----
Anthracene-d10	1719-06-8	1	%	88.5	89.6	----	----	----	----
4-Terphenyl-d14	1718-51-0	1	%	85.7	87.1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	96.9	86.8	87.2	109	108	
Toluene-D8	2037-26-5	2	%	114	95.0	88.0	93.0	76.6	
4-Bromofluorobenzene	460-00-4	2	%	128	114	99.7	105	91.0	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	60.0	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			QC111_120517	----	----	----	----
Client sampling date / time		12-May-2017 00:00			----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1706071-011	-----	-----	-----	-----	
				Result	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	
^ Total Xylenes	1330-20-7	2	µg/L	<2	----	----	----	----	
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----	
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	98.9	----	----	----	----	
Toluene-D8	2037-26-5	2	%	75.5	----	----	----	----	
4-Bromofluorobenzene	460-00-4	2	%	87.6	----	----	----	----	



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
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	130

QUALITY CONTROL REPORT

Work Order	: EM1706071	Page	: 1 of 23
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 15-May-2017
Order number	: 60537182 3.5	Date Analysis Commenced	: 16-May-2017
C-O-C number	: ----	Issue Date	: 22-May-2017
Sampler	: nk/mw/jm		
Site	: Fishermans Bend		
Quote number	: ME/199/16		
No. of samples received	: 11		
No. of samples analysed	: 11		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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.

Signatories	Position	Accreditation Category
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Herman Lin	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, 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: 889858)									
EM1706104-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.68	7.64	0.522	0% - 20%
EM1706064-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	9.21	9.51	3.20	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 891951)									
EM1705143-014	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6260	6340	1.30	0% - 20%
EM1706069-011	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	4100	4310	5.02	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 889857)									
EM1706024-010	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	20	21	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	20	21	0.00	0% - 20%
EM1706064-002	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	23	26	10.3	0% - 20%
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	11	9	17.6	0% - 50%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	34	35	0.00	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 889605)									
EM1706056-006	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	68	68	0.00	0% - 20%
EM1706024-009	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	5	3	51.5	No Limit
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 900294)									
EM1705994-021	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	699	663	5.32	0% - 20%
EM1706144-001	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	74	84	12.1	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 889604)									
EM1706056-006	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	2880	2650	8.18	0% - 20%
EM1706024-009	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	6	6	0.00	No Limit
ED093F: Dissolved Major Cations (QC Lot: 893502)									



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: 893502) - continued									
EM1705827-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	397	402	1.21	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	1260	1280	1.24	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	9710	9820	1.15	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	190	191	0.614	0% - 20%
EM1706071-001	GW52_120517	ED093F: Calcium	7440-70-2	1	mg/L	64	64	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	37	38	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	286	291	1.77	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	12	13	0.00	0% - 50%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 893500)									
EM1706009-002	Anonymous	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	0.007	0.007	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.005	0.006	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.006	0.006	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	0.008	0.008	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.002	70.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.019	0.019	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.27	0.31	14.2	0% - 20%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1705827-001	Anonymous	EG020A-F: Iron	7439-89-6	0.05	mg/L	0.22	0.24	6.39	No Limit
		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0002	<0.0002	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.003	0.002	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	1.46	1.44	1.31	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.119	0.118	0.886	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.024	0.027	13.9	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.02	<0.02	0.00	No Limit
EM1706071-003	GW72_120517	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	2.53	2.50	1.11	0% - 20%
		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 893504)									
EM1706071-003	GW72_120517	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.015	0.014	0.00	0% - 50%
		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	0.337	0.337	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.012	0.012	0.00	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.013	0.012	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: 893504) - continued									
EM1706071-003	GW72_120517	EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.05	0.05	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	10.8	10.9	1.19	0% - 20%
EM1706203-001	Anonymous	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	<0.001	<0.001	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	0.002	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	0.026	0.026	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.023	0.024	7.15	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.21	0.20	5.23	0% - 20%
		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	0.27	0.26	0.00	No Limit		
EG020T: Total Metals by ICP-MS (QC Lot: 890740)									
EM1706071-009	QC109_120517	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EM1705599-006	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EG035F: Dissolved Mercury by FIMS (QC Lot: 893503)									
EM1706009-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1705827-001	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: 893505)									
EM1706071-004	GW75_120517	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	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 (%)	
EG035F: Dissolved Mercury by FIMS (QC Lot: 893505) - continued										
EM1706228-003	Anonymous	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: 898010)										
EM1705599-006	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
EM1706071-009	QC109_120517	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
EK040P: Fluoride by PC Titrator (QC Lot: 889859)										
EM1706064-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.00	No Limit	
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 892314)										
EM1705964-011	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	2.55	2.56	0.00	0% - 20%	
EM1705974-007	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.01	0.00	No Limit	
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 892317)										
EM1706071-003	GW72_120517	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	2.89	2.88	0.386	0% - 20%	
EM1706142-008	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.09	0.09	0.00	No Limit	
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 889603)										
EM1706071-005	GMW02_120517	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EM1706024-009	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 892315)										
EM1705964-011	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.31	0.32	0.00	0% - 20%	
EM1705974-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 892316)										
EM1706071-003	GW72_120517	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	4.91	4.89	0.398	0% - 20%	
EM1706142-008	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 889606)										
EM1706071-005	GMW02_120517	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.02	0.01	0.00	No Limit	
EM1706024-009	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EP005: Total Organic Carbon (TOC) (QC Lot: 897711)										
EM1705994-016	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	35	35	0.00	0% - 20%	
EM1706071-004	GW75_120517	EP005: Total Organic Carbon	----	1	mg/L	4	5	0.00	No Limit	
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 894332)										
EM1706124-001	Anonymous	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	



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: 894332) - continued										
EM1706124-001	Anonymous	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	
EM1706124-006	Anonymous	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	
EP074B: Oxygenated Compounds (QC Lot: 894332)										
EM1706124-001	Anonymous	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	
EM1706124-006	Anonymous	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: 894332)										
EM1706124-001	Anonymous	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	<1	0.00	No Limit	
EM1706124-006	Anonymous	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	<1	0.00	No Limit	
EP074D: Fumigants (QC Lot: 894332)										
EM1706124-001	Anonymous	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	



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: 894332) - continued									
EM1706124-006	Anonymous	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: 894332)									
EM1706124-001	Anonymous	EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	<0.5	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		
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	<2	0.00	No Limit		
EM1706124-006	Anonymous	EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	<0.5	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



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: 894332) - continued									
EM1706124-006	Anonymous	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		
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	<2	0.00	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 894332)									
EM1706124-001	Anonymous	EP074-WF: 1.4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	<0.1	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
EM1706124-006	Anonymous	EP074-WF: 1.4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	<0.1	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



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: 894332) - continued									
EM1706124-006	Anonymous	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: 894332)									
EM1706124-001	Anonymous	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
		EP074-WF: Total Trihalomethanes	----	1	µg/L	<1	<1	0.00	No Limit
EM1706124-006	Anonymous	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
		EP074-WF: Total Trihalomethanes	----	1	µg/L	<1	<1	0.00	No Limit
EP074H: Naphthalene (QC Lot: 894332)									
EM1706124-001	Anonymous	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1706124-006	Anonymous	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 894331)									
EM1706124-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1706124-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 894336)									
EM1706071-009	QC109_120517	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1706138-108	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 894343)									
EP1704978-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1706027-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	60	50	18.9	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 894331)									
EM1706124-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1706124-006	Anonymous	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: 894336)									
EM1706071-009	QC109_120517	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1706138-108	Anonymous	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: 894343)									
EP1704978-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1706027-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	50	40	0.00	No Limit
EP080: BTEXN (QC Lot: 894331)									
EM1706124-001	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



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: 894331) - continued									
EM1706124-001	Anonymous	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
EM1706124-006	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
EP080: BTEXN (QC Lot: 894336)									
EM1706071-009	QC109_120517	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
EM1706138-108	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
EP080: BTEXN (QC Lot: 894343)									
EP1704978-001	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
EM1706027-001	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



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: 894343) - continued									
EM1706027-001	Anonymous	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
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 890874)									
EM1706071-002	GW40A/C_120517	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.04	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.11	0.10	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 890874)									
EM1706071-002	GW40A/C_120517	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 890874)									
EM1706071-002	GW40A/C_120517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 890874)									
EM1706071-002	GW40A/C_120517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit

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 Client : AECOM Australia Pty Ltd
 Project : 60537182



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 (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 890874) - continued									
EM1706071-002	GW40A/C_120517	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 890874)									
EM1706071-002	GW40A/C_120517	EP231X: Sum of PFAS	----	0.01	µg/L	0.16	0.14	13.3	0% - 50%



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: 891951)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	96	106	
				<10	293 mg/L	103	96	106	
ED037P: Alkalinity by PC Titrator (QCLot: 889857)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	99.1	90	110	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 889605)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	108	92	115	
				<1	100 mg/L	104	92	115	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<1	500 mg/L	98.0	85	118	
ED045G: Chloride by Discrete Analyser (QCLot: 889604)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	108	89	117	
				<1	1000 mg/L	105	92	112	
ED093F: Dissolved Major Cations (QCLot: 893502)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	99.6	92	108	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	101	92	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	96.8	89	107	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	100	89	107	
EG020F: Dissolved Metals by ICP-MS (QCLot: 893500)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	101	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	104	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.4	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.3	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.3	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.6	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.0	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	103	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	101	94	106	
EG020F: Dissolved Metals by ICP-MS (QCLot: 893504)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	99.4	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	106	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	93.6	86	110	



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: 893504) - continued									
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	99.7	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.6	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	103	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	106	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	101	94	106	
EG020T: Total Metals by ICP-MS (QCLot: 890740)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.5	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.0	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.1	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.3	88	113	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.2	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	91.6	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.9	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	99	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 893503)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.4	88	117	
EG035F: Dissolved Mercury by FIMS (QCLot: 893505)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.1	88	117	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 898010)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	97.4	87	113	
EK040P: Fluoride by PC Titrator (QCLot: 889859)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	101	85	112	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 892314)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	101	80	115	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 892317)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	108	80	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 889603)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	106	94	107	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 892315)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	106	89	114	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 892316)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	106	89	114	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 889606)									



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
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 889606) - continued									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	99.4	94	108	
EP005: Total Organic Carbon (TOC) (QCLot: 897711)									
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	93.6	81	109	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 894332)									
EP074-WF: Benzene	71-43-2	1	µg/L	<1	20 µg/L	101	81	119	
EP074-WF: Toluene	108-88-3	1	µg/L	<1	20 µg/L	102	84	117	
EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	20 µg/L	99.5	83	114	
EP074-WF: meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	40 µg/L	99.8	81	116	
EP074-WF: Styrene	100-42-5	1	µg/L	<1	20 µg/L	95.9	82	118	
EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	20 µg/L	101	85	115	
EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	20 µg/L	98.8	81	113	
EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	20 µg/L	91.7	76	111	
EP074-WF: 1,3,5-Trimethylbenzene	108-67-8	1	µg/L	<1	20 µg/L	94.7	79	109	
EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	20 µg/L	94.9	77	111	
EP074-WF: 1,2,4-Trimethylbenzene	95-63-6	1	µg/L	<1	20 µg/L	91.9	79	108	
EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	20 µg/L	97.1	80	110	
EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	20 µg/L	101	75	111	
EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	20 µg/L	90.4	68	111	
EP074B: Oxygenated Compounds (QCLot: 894332)									
EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	200 µg/L	96.8	69	147	
EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	200 µg/L	99.1	77	124	
EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	200 µg/L	92.6	71	131	
EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	200 µg/L	102	73	128	
EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	200 µg/L	103	75	129	
EP074C: Sulfonated Compounds (QCLot: 894332)									
EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	20 µg/L	85.5	64	119	
EP074D: Fumigants (QCLot: 894332)									
EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	20 µg/L	95.8	74	117	
EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	20 µg/L	95.5	83	118	
EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	20 µg/L	88.9	74	109	
EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	20 µg/L	87.2	70	109	
EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	20 µg/L	88.4	81	116	
EP074E: Halogenated Aliphatic Compounds (QCLot: 894332)									
EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	200 µg/L	92.5	61	137	
EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	200 µg/L	108	66	137	
EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	200 µg/L	120	67	135	
EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	200 µg/L	90.6	52	128	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP074E: Halogenated Aliphatic Compounds (QCLot: 894332) - continued									
EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	200 µg/L	102	76	125	
EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	200 µg/L	108	74	123	
EP074-WF: 1,1-Dichloroethene	75-35-4	1	µg/L	<1	20 µg/L	100	75	120	
EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	20 µg/L	69.8	37	120	
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	20 µg/L	114	72	159	
EP074-WF: trans-1,2-Dichloroethene	156-60-5	1	µg/L	<1	20 µg/L	88.3	78	117	
EP074-WF: 1,1-Dichloroethane	75-34-3	1	µg/L	<1	20 µg/L	98.6	81	118	
EP074-WF: cis-1,2-Dichloroethene	156-59-2	1	µg/L	<1	20 µg/L	97.2	83	118	
EP074-WF: 1,1,1-Trichloroethane	71-55-6	1	µg/L	<1	20 µg/L	94.0	76	115	
EP074-WF: 1,1-Dichloropropylene	563-58-6	1	µg/L	<1	20 µg/L	93.4	75	117	
EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	20 µg/L	92.1	72	111	
EP074-WF: 1,2-Dichloroethane	107-06-2	1	µg/L	<1	20 µg/L	88.3	81	120	
EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	20 µg/L	95.4	78	116	
EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	20 µg/L	85.7	79	116	
EP074-WF: 1,1,2-Trichloroethane	79-00-5	1	µg/L	<1	20 µg/L	96.7	85	119	
EP074-WF: 1,3-Dichloropropane	142-28-9	1	µg/L	<1	20 µg/L	98.5	85	119	
EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	20 µg/L	89.7	76	120	
EP074-WF: 1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L	<1	20 µg/L	92.0	78	110	
EP074-WF: trans-1,4-Dichloro-2-butene	110-57-6	1	µg/L	<1	20 µg/L	93.3	64	118	
EP074-WF: cis-1,4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	20 µg/L	80.6	51	113	
EP074-WF: 1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L	<1	20 µg/L	104	85	121	
EP074-WF: 1,2,3-Trichloropropane	96-18-4	1	µg/L	<1	20 µg/L	98.9	84	118	
EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	20 µg/L	87.0	64	109	
EP074-WF: 1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	20 µg/L	93.0	65	115	
EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	20 µg/L	97.8	70	121	
EP074F: Halogenated Aromatic Compounds (QCLot: 894332)									
EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	20 µg/L	98.7	85	115	
EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	20 µg/L	94.5	82	116	
EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	20 µg/L	94.2	81	112	
EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	20 µg/L	91.5	80	110	
EP074-WF: 1,3-Dichlorobenzene	541-73-1	1	µg/L	<1	20 µg/L	93.4	80	110	
EP074-WF: 1,4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	20 µg/L	98.9	80	112	
EP074-WF: 1,2-Dichlorobenzene	95-50-1	1	µg/L	<1	20 µg/L	99.8	84	111	
EP074-WF: 1,2,4-Trichlorobenzene	120-82-1	1	µg/L	<1	20 µg/L	81.8	70	114	
EP074-WF: 1,2,3-Trichlorobenzene	87-61-6	1	µg/L	<1	20 µg/L	92.7	78	116	
EP074G: Trihalomethanes (QCLot: 894332)									
EP074-WF: Chloroform	67-66-3	1	µg/L	<1	20 µg/L	97.3	82	118	
EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	20 µg/L	93.8	75	112	
EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	20 µg/L	90.8	73	108	



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	
EP074G: Trihalomethanes (QCLot: 894332) - continued									
EP074-WF: Bromoform	75-25-2	1	µg/L	<1	20 µg/L	89.3	68	107	
EP074-WF: Total Trihalomethanes	----	1	µg/L	<1	----	----	----	----	
EP074H: Naphthalene (QCLot: 894332)									
EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	92.6	80	116	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 889556)									
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	81.3	39	110	
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	93.2	40	124	
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	90.1	47	117	
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	94.7	51	118	
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	92.2	53	119	
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	85.0	51	113	
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	91.6	59	123	
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	88.6	58	123	
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	88.5	52	126	
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	88.6	55	123	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	97.4	52	131	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	100	57	126	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	100	56	126	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	110	53	123	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	109	53	125	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	110	53	125	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 889557)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	95.6	53	123	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	96.2	57	133	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	85.4	55	141	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894331)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	87.2	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894336)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	94.4	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894343)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	75.8	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 889557)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	91.2	54	122	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	88.7	56	132	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	90.0	51	137	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894331)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	83.9	65	125	



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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894336)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	90.4	65	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894343)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	72.0	65	125
EP080: BTEXN (QCLot: 894331)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	91.6	76	120
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	101	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	2	µg/L	<2	40 µg/L	95.7	72	130
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	98.3	78	128
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	112	71	129
EP080: BTEXN (QCLot: 894336)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	111	76	120
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	99.5	76	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	104	72	124
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	104	72	130
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	106	78	128
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	104	71	129
EP080: BTEXN (QCLot: 894343)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	89.2	76	120
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	83.1	76	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	80.9	72	124
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	83.5	72	130
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	92.0	78	128
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	108	71	129
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 890874)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	92.4	70	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	102	70	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	90.0	70	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	101	70	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	91.2	70	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	101	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 890874)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	99.6	70	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	76.0	70	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	86.0	70	130



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	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 890874) - continued									
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	88.4	70	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	98.2	70	130	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	96.6	70	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	95.2	70	130	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	92.4	70	130	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	95.6	70	130	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	97.8	70	130	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	98.7	70	124	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 890874)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	97.4	70	130	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	106	70	130	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	94.0	70	129	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	1.25 µg/L	92.9	70	129	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	110	70	126	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	82.2	70	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	94.2	70	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 890874)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	102	70	130	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	98.8	70	130	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	72.6	70	130	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	87.2	70	130	

Matrix Spike (MS) Report

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

Sub-Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 889605)							
EM1706024-010	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	94.4	70	130
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)							
EM1705994-023	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	120	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 889604)							



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: 889604) - continued							
EM1706024-010	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	106	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 893500)							
EM1705827-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	92.2	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	95.4	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	95.9	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	96.0	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	69.4	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.2	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	96.6	75	131
EG020F: Dissolved Metals by ICP-MS (QCLot: 893504)							
EM1706071-003	GW72_120517	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	93.6	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	108	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	96.2	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	103	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	102	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	102	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	104	75	131
EG020T: Total Metals by ICP-MS (QCLot: 890740)							
EM1705599-006	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	101	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	95.8	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	98.3	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	88.7	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	110	83	121
		EG020A-T: Nickel	7440-02-0	1 mg/L	100	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	100	74	116
		EG035F: Dissolved Mercury by FIMS (QCLot: 893503)					
EM1705827-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	86.7	70	120
EG035F: Dissolved Mercury by FIMS (QCLot: 893505)							
EM1706071-005	GMW02_120517	EG035F: Mercury	7439-97-6	0.01 mg/L	86.3	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 898010)							
EM1705599-007	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	90.8	70	130
EK040P: Fluoride by PC Titrator (QCLot: 889859)							
EM1706071-002	GW40A/C_120517	EK040P: Fluoride	16984-48-8	5 mg/L	86.6	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 892314)							



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
EK055G: Ammonia as N by Discrete Analyser (QCLot: 892314) - continued							
EM1705964-012	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	112	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 892317)							
EM1706071-004	GW75_120517	EK055G: Ammonia as N	7664-41-7	1 mg/L	95.2	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 889603)							
EM1706024-010	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	96.2	80	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 892315)							
EM1705964-012	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	102	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 892316)							
EM1706071-004	GW75_120517	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 889606)							
EM1706024-010	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	98.5	79	123
EP005: Total Organic Carbon (TOC) (QCLot: 897711)							
EM1705994-019	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	91.6	80	114
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 894332)							
EM1706124-002	Anonymous	EP074-WF: Benzene	71-43-2	20 µg/L	115	76	128
		EP074-WF: Toluene	108-88-3	20 µg/L	109	72	132
EP074E: Halogenated Aliphatic Compounds (QCLot: 894332)							
EM1706124-002	Anonymous	EP074-WF: 1,1-Dichloroethene	75-35-4	20 µg/L	# 129	63	129
		EP074-WF: Trichloroethene	79-01-6	20 µg/L	99.4	64	126
EP074F: Halogenated Aromatic Compounds (QCLot: 894332)							
EM1706124-002	Anonymous	EP074-WF: Chlorobenzene	108-90-7	20 µg/L	105	81	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894331)							
EM1706124-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	112	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894336)							
EM1706071-010	QC110_120517	EP080: C6 - C9 Fraction	----	280 µg/L	88.9	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894343)							
EM1706027-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	70.0	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894331)							
EM1706124-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	106	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894336)							
EM1706071-010	QC110_120517	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	83.3	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894343)							
EM1706027-002	Anonymous						



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 Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894343) - continued							
EM1706027-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	66.5	44	122
EP080: BTEXN (QCLot: 894331)							
EM1706124-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	104	68	130
		EP080: Toluene	108-88-3	20 µg/L	112	72	132
EP080: BTEXN (QCLot: 894336)							
EM1706071-010	QC110_120517	EP080: Benzene	71-43-2	20 µg/L	104	68	130
		EP080: Toluene	108-88-3	20 µg/L	98.9	72	132
EP080: BTEXN (QCLot: 894343)							
EM1706027-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	111	68	130
		EP080: Toluene	108-88-3	20 µg/L	85.8	72	132
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 890874)							
EM1706071-002	GW40A/C_120517	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	76.8	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	126	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	88.2	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	118	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	90.2	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	98.0	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 890874)							
EM1706071-002	GW40A/C_120517	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	112	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	93.0	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	78.2	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	102	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	129	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	90.2	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	97.8	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	83.6	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	91.0	50	130
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.5 µg/L	92.2	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	91.0	50	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 890874)							
EM1706071-002	GW40A/C_120517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	102	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	122	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	118	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	1.25 µg/L	110	50	130



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 890874) - continued							
EM1706071-002	GW40A/C_120517	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	98.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	97.0	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	94.8	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 890874)							
EM1706071-002	GW40A/C_120517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	122	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	122	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	95.6	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	65.0	50	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1706071	Page	: 1 of 14
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 15-May-2017
Site	: Fishermans Bend	Issue Date	: 22-May-2017
Sampler	: nk/mw/jm	No. of samples received	: 11
Order number	: 60537182 3.5	No. of samples analysed	: 11

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							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EM1706071--004	GW75_120517	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP074E: Halogenated Aliphatic Compounds	EM1706124--002	Anonymous	1.1-Dichloroethene	75-35-4	129 %	63-129%	Recovery greater than upper control limit

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	----	----	----	16-May-2017	12-May-2017	4
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	----	----	----	16-May-2017	14-May-2017	2
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	----	----	----	16-May-2017	14-May-2017	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Fluoride by PC Titrator	1	11	9.09	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	8	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatle Fraction	0	14	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	8	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Method					
Matrix Spikes (MS) - Continued					
TRH - Semivolatiles Fraction	0	14	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	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)								
GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	16-May-2017	12-May-2017	*
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H)								
GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	17-May-2017	19-May-2017	✓
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P)								
GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	16-May-2017	26-May-2017	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G)								
GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	16-May-2017	09-Jun-2017	✓



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) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	22-May-2017	09-Jun-2017	✓	22-May-2017	09-Jun-2017	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	16-May-2017	09-Jun-2017	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	22-May-2017	09-Jun-2017	✓
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	18-May-2017	08-Nov-2017	✓
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC110_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC109_120517,	12-May-2017	17-May-2017	08-Nov-2017	✓	17-May-2017	08-Nov-2017	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	18-May-2017	09-Jun-2017	✓



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	
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC110_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC109_120517	12-May-2017	----	----	----	19-May-2017	09-Jun-2017	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517	12-May-2017	----	----	----	16-May-2017	09-Jun-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517	12-May-2017	----	----	----	18-May-2017	09-Jun-2017	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517	12-May-2017	----	----	----	16-May-2017	14-May-2017	*
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517	12-May-2017	----	----	----	17-May-2017	09-Jun-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517	12-May-2017	----	----	----	16-May-2017	14-May-2017	*



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	
EP005: Total Organic Carbon (TOC)								
Amber VOC Vial - Sulfuric Acid (EP005) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	19-May-2017	09-Jun-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074C: Sulfonated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074H: Naphthalene								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓



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)) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	17-May-2017	19-May-2017	✓	18-May-2017	26-Jun-2017	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC110_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC109_120517,	12-May-2017	17-May-2017	19-May-2017	✓	18-May-2017	26-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC109_120517,	QC110_120517	12-May-2017	18-May-2017	26-May-2017	✓	18-May-2017	26-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC111_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC108_120517,	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC110_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC109_120517,	12-May-2017	17-May-2017	19-May-2017	✓	18-May-2017	26-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC109_120517,	QC110_120517	12-May-2017	18-May-2017	26-May-2017	✓	18-May-2017	26-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC111_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC108_120517,	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓



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: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) QC109_120517,	QC110_120517	12-May-2017	18-May-2017	26-May-2017	✓	18-May-2017	26-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC111_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC108_120517,	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW40A/C_120517, MW1333_02_120517	GW72_120517,	12-May-2017	----	----	----	17-May-2017	08-Nov-2017	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) GW40A/C_120517, MW1333_02_120517	GW72_120517,	12-May-2017	----	----	----	17-May-2017	08-Nov-2017	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) GW40A/C_120517, MW1333_02_120517	GW72_120517,	12-May-2017	----	----	----	17-May-2017	08-Nov-2017	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW40A/C_120517, MW1333_02_120517	GW72_120517,	12-May-2017	----	----	----	17-May-2017	08-Nov-2017	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) GW40A/C_120517, MW1333_02_120517	GW72_120517,	12-May-2017	----	----	----	17-May-2017	08-Nov-2017	✓



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	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	29	13.79	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	4	31	12.90	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	11	9.09	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	31	12.90	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	8	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	14	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	6	53	11.32	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	29	6.90	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	31	6.45	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	31	6.45	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	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							
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	53	5.66	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	53	5.66	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	8	0.00	5.00	*	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	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	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Matrix Spikes (MS) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	14	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	53	5.66	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	16	6.25	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)
Ammonium as N	EK055G-NH ₄	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH ₃ G. 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)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. 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 SO ₄ DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. 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)



Analytical Methods	Method	Matrix	Method Descriptions
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)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.
Preparation Methods	Method	Matrix	Method Descriptions
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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1706071

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 4
Order number	: 60537182	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermans Bend		
Sampler	: nk/mw/jm		

Dates

Date Samples Received	: 15-May-2017 11:20	Issue Date	: 15-May-2017
Client Requested Due Date	: 22-May-2017	Scheduled Reporting Date	: 22-May-2017

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 3.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 11 / 11

General Comments

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



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020F Dissolved Metals by ICPMS	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EK055G-NH4 Ammonium as N	WATER - NT-01 & 02A Ca, Mg, Na, K, Cl, SO4, Alkalinity & Fluoride	WATER - NT-04 Nitrite and Nitrate	WATER - W-02T 8 metals (Total)	WATER - W-26 TRH/BTEX/N/PAH/8 Metals
EM1706071-001	12-May-2017 00:00	GW52_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-002	12-May-2017 00:00	GW40A/C_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-003	12-May-2017 00:00	GW72_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-004	12-May-2017 00:00	GW75_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-005	12-May-2017 00:00	GMW02_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-006	12-May-2017 00:00	MW1333_02_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-007	12-May-2017 00:00	QC106_120517	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PC)	WATER - EA015H Total Dissolved Solids - High Level	WATER - ED043 Total Oxidised Sulfur as SO4 2-	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - EK071G Reactive Phosphorus by Discrete analyser	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP074-WF Full VOCs with WF DL incl DCM & Acetone
EM1706071-001	12-May-2017 00:00	GW52_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-002	12-May-2017 00:00	GW40A/C_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-003	12-May-2017 00:00	GW72_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-004	12-May-2017 00:00	GW75_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-005	12-May-2017 00:00	GMW02_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-006	12-May-2017 00:00	MW1333_02_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-007	12-May-2017 00:00	QC106_120517	✓	✓	✓	✓	✓	✓	✓
EM1706071-009	12-May-2017 00:00	QC109_120517				✓			
EM1706071-010	12-May-2017 00:00	QC110_120517				✓			



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - W-05T TRH/BTEXN/8 Metals (Total)	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1706071-002	12-May-2017 00:00	GW40A/C_120517	✓		
EM1706071-003	12-May-2017 00:00	GW72_120517	✓		
EM1706071-006	12-May-2017 00:00	MW1333_02_120517	✓		
EM1706071-008	12-May-2017 00:00	QC108_120517			✓
EM1706071-009	12-May-2017 00:00	QC109_120517		✓	
EM1706071-010	12-May-2017 00:00	QC110_120517		✓	
EM1706071-011	12-May-2017 00:00	QC111_120517			✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
					Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator								
	GMW02_120517	Clear Plastic Bottle - Natural	----	12-May-2017	15-May-2017	✗	----	----
	GW40A/C_120517	Clear Plastic Bottle - Natural	----	12-May-2017	15-May-2017	✗	----	----
	GW52_120517	Clear Plastic Bottle - Natural	----	12-May-2017	15-May-2017	✗	----	----
	GW72_120517	Clear Plastic Bottle - Natural	----	12-May-2017	15-May-2017	✗	----	----
	GW75_120517	Clear Plastic Bottle - Natural	----	12-May-2017	15-May-2017	✗	----	----
	MW1333_02_120517	Clear Plastic Bottle - Natural	----	12-May-2017	15-May-2017	✗	----	----
	QC106_120517	Clear Plastic Bottle - Natural	----	12-May-2017	15-May-2017	✗	----	----
EK057G: Nitrite as N by Discrete Analyser								
	GMW02_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
	GW40A/C_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
	GW52_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
	GW72_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
	GW75_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
	MW1333_02_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
	QC106_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
EK071G: Reactive Phosphorus as P-By Discrete Analyser								
	GMW02_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
	GW40A/C_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
	GW52_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
	GW72_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
	GW75_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
	MW1333_02_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----
	QC106_120517	Clear Plastic Bottle - Natural	----	14-May-2017	15-May-2017	✗	----	----

CERTIFICATE OF ANALYSIS

Work Order	: EM1706071	Page	: 1 of 20
Amendment	: 1	Laboratory	: Environmental Division Melbourne
Client	: AECOM Australia Pty Ltd	Contact	: Carol Walsh
Contact	: MS AVERYLL COYNE	Address	: 4 Westall Rd Springvale VIC Australia 3171
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Telephone	: +61-3-8549 9608
Telephone	: +61 03 9653 1234	Date Samples Received	: 15-May-2017 11:20
Project	: 60537182	Date Analysis Commenced	: 16-May-2017
Order number	: 60537182 3.5	Issue Date	: 05-Jun-2017 13:24
C-O-C number	: ----		
Sampler	: nk/mw/jm		
Site	: Fishermans Bend		
Quote number	: ME/199/16		
No. of samples received	: 11		
No. of samples analysed	: 11		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Herman Lin	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, 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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020F&T: Filtered and total nickel results for EM1706071-005 have been confirmed by re-preparation and re-analysis.
- EG020T: Results for EM1706071-009 and 010 have been confirmed by re-preparation and re-analysis.
- Amendment (2/6/17): This report has been amended and re-released to allow the reporting of additional analytical data.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- 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	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.86	5.07	6.48	6.27	7.20	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1040	3830	580	616	663	
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	436	40	352	338	325	
Total Alkalinity as CaCO3	----	1	mg/L	436	40	352	338	325	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	213	1840	97	180	5	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	244	2350	153	233	10	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	254	776	25	18	202	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	64	419	128	122	73	
Magnesium	7439-95-4	1	mg/L	37	154	13	25	22	
Sodium	7440-23-5	1	mg/L	286	725	36	51	126	
Potassium	7440-09-7	1	mg/L	12	12	6	12	13	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.32	1.73	0.05	0.04	0.04	
Arsenic	7440-38-2	0.001	mg/L	0.010	0.002	0.015	0.006	0.008	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.008	0.002	<0.001	<0.001	0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	0.007	<0.001	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	0.002	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.033	0.640	0.337	0.135	0.120	
Nickel	7440-02-0	0.001	mg/L	0.014	0.103	0.012	0.007	0.143	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.013	0.433	0.013	0.026	0.040	
Iron	7439-89-6	0.05	mg/L	1.21	2.84	10.8	0.72	3.58	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	4.06	10.0	3.28	1.48	2.24	
Arsenic	7440-38-2	0.001	mg/L	0.015	0.010	0.024	0.011	0.023	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0004	0.0003	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.022	0.019	0.015	0.004	0.008	
Copper	7440-50-8	0.001	mg/L	0.004	0.017	0.016	0.017	0.010	
Nickel	7440-02-0	0.001	mg/L	0.018	0.110	0.018	0.010	0.113	
Lead	7439-92-1	0.001	mg/L	0.004	0.009	0.009	0.068	0.030	
Zinc	7440-66-6	0.005	mg/L	0.033	0.459	0.138	0.363	0.114	
Manganese	7439-96-5	0.001	mg/L	0.040	0.655	0.380	0.153	0.161	
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	4.68	10.5	18.6	3.57	10.4	
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.1	0.2	0.3	0.2	0.2	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.75	1.05	2.89	1.03	3.04	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.75	1.05	2.89	1.03	3.02	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.01	<0.01	0.07	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.01	6.84	4.91	6.51	0.06	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	6.85	4.91	6.58	0.06	
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	0.02	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	20.3	61.0	9.76	11.0	12.3	
Total Cations	----	0.01	meq/L	19.0	65.4	9.18	10.7	11.3	
Ionic Balance	----	0.01	%	3.37	3.50	3.07	1.56	4.37	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	39	13	8	4	14	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	8	----	----	<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	----	
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	<10	----	----	<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	<1	----	----	<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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	3	----	----	<1	----	
cis-1.2-Dichloroethene	156-59-2	1	µg/L	20	----	----	<1	----	
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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
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	----	
[^] Total Trihalomethanes	----	1	µg/L	<1	----	----	<1	----	
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L	<5	----	----	<5	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	<1.0	3.5	<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	1.4	<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	1.9	<1.0	
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	<1.0	1.8	<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	1.2	<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	1.1	<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	10.9	<0.6	
[^] Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	1.2	<0.6	
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	60	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	260	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
[^] C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	320	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	20	<20	<20	<20	<20	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	220	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	100	<100	220	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	7	<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	7	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	0.05	<0.02	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	0.11	<0.02	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	<0.01	<0.01	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	<0.02	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	<0.1	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	<0.02	<0.02	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	<0.01	<0.01	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	<0.05	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	<0.02	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	<0.02	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	<0.02	----	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	<0.05	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	<0.05	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	<0.05	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW52_120517	GW40A/C_120517	GW72_120517	GW75_120517	GMW02_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-001	EM1706071-002	EM1706071-003	EM1706071-004	EM1706071-005	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	<0.05	----	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	0.16	<0.01	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	0.11	<0.01	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	0.16	<0.01	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	99.1	----	----	92.8	----	
Toluene-D8	2037-26-5	1	%	110	----	----	94.3	----	
4-Bromofluorobenzene	460-00-4	1	%	122	----	----	102	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	27.3	30.2	31.0	29.1	37.2	
2-Chlorophenol-D4	93951-73-6	1	%	76.5	82.3	78.4	75.5	81.7	
2,4,6-Tribromophenol	118-79-6	1	%	84.7	90.0	74.1	74.4	83.3	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	71.5	78.9	74.7	71.7	79.0	
Anthracene-d10	1719-06-8	1	%	85.2	88.8	79.7	76.4	85.1	
4-Terphenyl-d14	1718-51-0	1	%	90.7	89.2	76.8	75.0	87.3	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	90.5	90.3	84.6	84.7	91.0	
Toluene-D8	2037-26-5	2	%	105	100	96.6	90.4	100	
4-Bromofluorobenzene	460-00-4	2	%	122	120	114	110	118	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	67.8	68.1	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time		12-May-2017 00:00			12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.04	6.90	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1140	1030	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	459	428	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	459	428	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	214	----	----	----	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	15	252	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	482	245	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	100	63	----	----	----	
Magnesium	7439-95-4	1	mg/L	43	37	----	----	----	
Sodium	7440-23-5	1	mg/L	284	291	----	----	----	
Potassium	7440-09-7	1	mg/L	13	13	----	----	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.03	0.30	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.004	0.010	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	0.003	0.008	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.243	0.033	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.046	0.012	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.010	0.011	----	----	----	
Iron	7439-89-6	0.05	mg/L	1.86	1.21	----	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	6.19	4.39	----	<0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.012	0.015	----	<0.001	<0.001	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.022	0.023	----	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.008	0.004	----	<0.001	<0.001	
Nickel	7440-02-0	0.001	mg/L	0.066	0.018	----	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	0.010	0.004	----	<0.001	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.096	0.034	----	<0.005	<0.005	
Manganese	7439-96-5	0.001	mg/L	0.290	0.041	----	0.003	0.003	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	14.9	4.80	----	<0.05	<0.05	
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	<0.0001	<0.0001	----	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.5	0.1	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	5.40	0.76	----	----	----	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	5.38	0.76	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.18	<0.01	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.18	<0.01	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.02	<0.01	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	22.8	19.9	----	----	----	
Total Cations	----	0.01	meq/L	21.2	19.2	----	----	----	
Ionic Balance	----	0.01	%	3.53	1.89	----	----	----	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	27	33	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	<1	7	----	----	----	
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	----	----	----	
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	<10	<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	<1	<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	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	2	----	----	----	
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	19	----	----	----	
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	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
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	----	----	----	
[^] Total Trihalomethanes	----	1	µg/L	<1	<1	----	----	----	
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	----	----	----	
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	----	----	----	
Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	----	----	----	
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	----	----	----	
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	----	----	----	
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	----	----	----	
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	----	----	----	
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	----	----	----	
Benzo(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	----	----	----	
Chrysene	218-01-9	1	µg/L	<1.0	<1.0	----	----	----	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	----	----	----	
Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	----	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	----	----	----	
Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	----	----	----	
Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	----	----	----	
[^] Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	----	----	
[^] Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<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	70	<50	----	<50	<50	
C15 - C28 Fraction	----	100	µg/L	370	<100	----	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	<50	<50	
[^] C10 - C36 Fraction (sum)	----	50	µg/L	440	<50	----	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	20	<20	<20	<20	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	110	<100	----	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	340	<100	----	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	450	<100	----	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	110	<100	----	<100	<100	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	6	<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	6	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW1333_02_120517	QC106_120517	QC108_120517	QC109_120517	QC110_120517
Client sampling date / time				12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00	12-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706071-006	EM1706071-007	EM1706071-008	EM1706071-009	EM1706071-010	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	106	94.9	----	----	----	----
Toluene-D8	2037-26-5	1	%	119	99.1	----	----	----	----
4-Bromofluorobenzene	460-00-4	1	%	119	105	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	29.7	31.1	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1	%	79.8	85.4	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1	%	92.7	90.9	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	80.2	79.6	----	----	----	----
Anthracene-d10	1719-06-8	1	%	88.5	89.6	----	----	----	----
4-Terphenyl-d14	1718-51-0	1	%	85.7	87.1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	96.9	86.8	87.2	109	108	
Toluene-D8	2037-26-5	2	%	114	95.0	88.0	93.0	76.6	
4-Bromofluorobenzene	460-00-4	2	%	128	114	99.7	105	91.0	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	60.0	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			QC111_120517	----	----	----	----
Client sampling date / time		12-May-2017 00:00			----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1706071-011	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	----	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	98.9	----	----	----	----	----
Toluene-D8	2037-26-5	2	%	75.5	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	87.6	----	----	----	----	----



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
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	130

QUALITY CONTROL REPORT

Work Order	: EM1706071	Page	: 1 of 23
Amendment	: 1		
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 15-May-2017
Order number	: 60537182 3.5	Date Analysis Commenced	: 16-May-2017
C-O-C number	: ----	Issue Date	: 05-Jun-2017
Sampler	: nk/mw/jm		
Site	: Fishermans Bend		
Quote number	: ME/199/16		
No. of samples received	: 11		
No. of samples analysed	: 11		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Herman Lin	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, 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: 889858)									
EM1706104-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.68	7.64	0.522	0% - 20%
EM1706064-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	9.21	9.51	3.20	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 891951)									
EM1705143-014	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6260	6340	1.30	0% - 20%
EM1706069-011	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	4100	4310	5.02	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 889857)									
EM1706024-010	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	20	21	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	20	21	0.00	0% - 20%
EM1706064-002	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	23	26	10.3	0% - 20%
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	11	9	17.6	0% - 50%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	34	35	0.00	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 889605)									
EM1706056-006	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	68	68	0.00	0% - 20%
EM1706024-009	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	5	3	51.5	No Limit
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 900294)									
EM1705994-021	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	699	663	5.32	0% - 20%
EM1706144-001	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	74	84	12.1	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 889604)									
EM1706056-006	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	2880	2650	8.18	0% - 20%
EM1706024-009	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	6	6	0.00	No Limit
ED093F: Dissolved Major Cations (QC Lot: 893502)									



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: 893502) - continued									
EM1705827-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	397	402	1.21	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	1260	1280	1.24	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	9710	9820	1.15	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	190	191	0.614	0% - 20%
EM1706071-001	GW52_120517	ED093F: Calcium	7440-70-2	1	mg/L	64	64	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	37	38	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	286	291	1.77	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	12	13	0.00	0% - 50%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 893500)									
EM1706009-002	Anonymous	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	0.007	0.007	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.005	0.006	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.006	0.006	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	0.008	0.008	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.002	70.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.019	0.019	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.27	0.31	14.2	0% - 20%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1705827-001	Anonymous	EG020A-F: Iron	7439-89-6	0.05	mg/L	0.22	0.24	6.39	No Limit
		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0002	<0.0002	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.003	0.002	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	1.46	1.44	1.31	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.119	0.118	0.886	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.024	0.027	13.9	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.02	<0.02	0.00	No Limit
EM1706071-003	GW72_120517	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	2.53	2.50	1.11	0% - 20%
		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	0.015	0.014	0.00	0% - 50%
EM1706071-003	GW72_120517	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	0.337	0.337	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.012	0.012	0.00	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.013	0.012	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.02	<0.02	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: 893504) - continued									
EM1706071-003	GW72_120517	EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.05	0.05	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	10.8	10.9	1.19	0% - 20%
EM1706203-001	Anonymous	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	<0.001	<0.001	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	0.002	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	0.026	0.026	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.023	0.024	7.15	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.21	0.20	5.23	0% - 20%
		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	0.27	0.26	0.00	No Limit		
EG020T: Total Metals by ICP-MS (QC Lot: 890740)									
EM1706071-009	QC109_120517	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: Manganese	7439-96-5	0.001	mg/L	0.003	0.003	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EM1705599-006	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: Manganese	7439-96-5	0.001	mg/L	0.002	0.002	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EG035F: Dissolved Mercury by FIMS (QC Lot: 893503)									
EM1706009-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1705827-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	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 (%)	
EG035F: Dissolved Mercury by FIMS (QC Lot: 893505)										
EM1706071-004	GW75_120517	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
EM1706228-003	Anonymous	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: 898010)										
EM1705599-006	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
EM1706071-009	QC109_120517	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
EK040P: Fluoride by PC Titrator (QC Lot: 889859)										
EM1706064-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.00	No Limit	
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 892314)										
EM1705964-011	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	2.55	2.56	0.00	0% - 20%	
EM1705974-007	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.01	0.00	No Limit	
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 892317)										
EM1706071-003	GW72_120517	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	2.89	2.88	0.386	0% - 20%	
EM1706142-008	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.09	0.09	0.00	No Limit	
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 889603)										
EM1706071-005	GMW02_120517	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EM1706024-009	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 892315)										
EM1705964-011	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.31	0.32	0.00	0% - 20%	
EM1705974-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 892316)										
EM1706071-003	GW72_120517	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	4.91	4.89	0.398	0% - 20%	
EM1706142-008	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 889606)										
EM1706071-005	GMW02_120517	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.02	0.01	0.00	No Limit	
EM1706024-009	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EP005: Total Organic Carbon (TOC) (QC Lot: 897711)										
EM1705994-016	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	35	35	0.00	0% - 20%	
EM1706071-004	GW75_120517	EP005: Total Organic Carbon	----	1	mg/L	4	5	0.00	No Limit	
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 894332)										
EM1706124-001	Anonymous	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	



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: 894332) - continued										
EM1706124-001	Anonymous	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	
EM1706124-006	Anonymous	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			
EP074B: Oxygenated Compounds (QC Lot: 894332)										
EM1706124-001	Anonymous	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	
EM1706124-006	Anonymous	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: 894332)										
EM1706124-001	Anonymous	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	<1	0.00	No Limit	
EM1706124-006	Anonymous	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	<1	0.00	No Limit	
EP074D: Fumigants (QC Lot: 894332)										
EM1706124-001	Anonymous	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	



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: 894332) - continued									
EM1706124-001	Anonymous	EP074-WF: trans-1.3-Dichloropropylene	10061-02-6	2	µg/L	<2	<2	0.00	No Limit
EM1706124-006	Anonymous	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: 894332)									
EM1706124-001	Anonymous	EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	<0.5	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		
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	<2	0.00	No Limit		
EM1706124-006	Anonymous	EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	<0.5	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



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: 894332) - continued									
EM1706124-006	Anonymous	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		
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	<2	0.00	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 894332)									
EM1706124-001	Anonymous	EP074-WF: 1,4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	<0.1	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
EM1706124-006	Anonymous	EP074-WF: 1,4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	<0.1	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



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: 894332) - continued									
EM1706124-006	Anonymous	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: 894332)									
EM1706124-001	Anonymous	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
		EP074-WF: Total Trihalomethanes	----	1	µg/L	<1	<1	0.00	No Limit
EM1706124-006	Anonymous	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
		EP074-WF: Total Trihalomethanes	----	1	µg/L	<1	<1	0.00	No Limit
EP074H: Naphthalene (QC Lot: 894332)									
EM1706124-001	Anonymous	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1706124-006	Anonymous	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 894331)									
EM1706124-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1706124-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 894336)									
EM1706071-009	QC109_120517	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1706138-108	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 894343)									
EP1704978-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1706027-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	60	50	18.9	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 894331)									
EM1706124-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1706124-006	Anonymous	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: 894336)									
EM1706071-009	QC109_120517	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1706138-108	Anonymous	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: 894343)									
EP1704978-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1706027-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	50	40	0.00	No Limit
EP080: BTEXN (QC Lot: 894331)									
EM1706124-001	Anonymous	EP080: Benzene	71-43-2	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 (%)
EP080: BTEXN (QC Lot: 894331) - continued									
EM1706124-001	Anonymous	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
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
EM1706124-006	Anonymous	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
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 894336)									
EM1706071-009	QC109_120517	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
EM1706138-108	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
EP080: BTEXN (QC Lot: 894343)									
EP1704978-001	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
EM1706027-001	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



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: 894343) - continued									
EM1706027-001	Anonymous	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
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 890874)									
EM1706071-002	GW40A/C_120517	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.04	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.11	0.10	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 890874)									
EM1706071-002	GW40A/C_120517	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 890874)									
EM1706071-002	GW40A/C_120517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 890874)									
EM1706071-002	GW40A/C_120517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit

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 Work Order : EM1706071 Amendment 1
 Client : AECOM Australia Pty Ltd
 Project : 60537182



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 (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 890874) - continued									
EM1706071-002	GW40A/C_120517	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 890874)									
EM1706071-002	GW40A/C_120517	EP231X: Sum of PFAS	----	0.01	µg/L	0.16	0.14	13.3	0% - 50%



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: 891951)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	96	106	
				<10	293 mg/L	103	96	106	
ED037P: Alkalinity by PC Titrator (QCLot: 889857)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	99.1	90	110	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 889605)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	108	92	115	
				<1	100 mg/L	104	92	115	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<1	500 mg/L	98.0	85	118	
ED045G: Chloride by Discrete Analyser (QCLot: 889604)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	108	89	117	
				<1	1000 mg/L	105	92	112	
ED093F: Dissolved Major Cations (QCLot: 893502)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	99.6	92	108	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	101	92	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	96.8	89	107	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	100	89	107	
EG020F: Dissolved Metals by ICP-MS (QCLot: 893500)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	101	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	104	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.4	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.3	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.3	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.6	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.0	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	103	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	101	94	106	
EG020F: Dissolved Metals by ICP-MS (QCLot: 893504)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	99.4	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	106	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	93.6	86	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	
EG020F: Dissolved Metals by ICP-MS (QCLot: 893504) - continued									
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	99.7	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.6	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	103	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	106	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	101	94	106	
EG020T: Total Metals by ICP-MS (QCLot: 890740)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.5	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.0	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.1	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.3	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.0	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.2	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	91.6	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.9	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	99	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 893503)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.4	88	117	
EG035F: Dissolved Mercury by FIMS (QCLot: 893505)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.1	88	117	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 898010)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	97.4	87	113	
EK040P: Fluoride by PC Titrator (QCLot: 889859)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	101	85	112	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 892314)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	101	80	115	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 892317)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	108	80	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 889603)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	106	94	107	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 892315)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	106	89	114	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 892316)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	106	89	114	



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
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 889606)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	99.4	94	108	
EP005: Total Organic Carbon (TOC) (QCLot: 897711)									
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	93.6	81	109	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 894332)									
EP074-WF: Benzene	71-43-2	1	µg/L	<1	20 µg/L	101	81	119	
EP074-WF: Toluene	108-88-3	1	µg/L	<1	20 µg/L	102	84	117	
EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	20 µg/L	99.5	83	114	
EP074-WF: meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	40 µg/L	99.8	81	116	
EP074-WF: Styrene	100-42-5	1	µg/L	<1	20 µg/L	95.9	82	118	
EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	20 µg/L	101	85	115	
EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	20 µg/L	98.8	81	113	
EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	20 µg/L	91.7	76	111	
EP074-WF: 1,3,5-Trimethylbenzene	108-67-8	1	µg/L	<1	20 µg/L	94.7	79	109	
EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	20 µg/L	94.9	77	111	
EP074-WF: 1,2,4-Trimethylbenzene	95-63-6	1	µg/L	<1	20 µg/L	91.9	79	108	
EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	20 µg/L	97.1	80	110	
EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	20 µg/L	101	75	111	
EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	20 µg/L	90.4	68	111	
EP074B: Oxygenated Compounds (QCLot: 894332)									
EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	200 µg/L	96.8	69	147	
EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	200 µg/L	99.1	77	124	
EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	200 µg/L	92.6	71	131	
EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	200 µg/L	102	73	128	
EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	200 µg/L	103	75	129	
EP074C: Sulfonated Compounds (QCLot: 894332)									
EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	20 µg/L	85.5	64	119	
EP074D: Fumigants (QCLot: 894332)									
EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	20 µg/L	95.8	74	117	
EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	20 µg/L	95.5	83	118	
EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	20 µg/L	88.9	74	109	
EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	20 µg/L	87.2	70	109	
EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	20 µg/L	88.4	81	116	
EP074E: Halogenated Aliphatic Compounds (QCLot: 894332)									
EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	200 µg/L	92.5	61	137	
EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	200 µg/L	108	66	137	
EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	200 µg/L	120	67	135	
EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	200 µg/L	90.6	52	128	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP074E: Halogenated Aliphatic Compounds (QCLot: 894332) - continued									
EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	200 µg/L	102	76	125	
EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	200 µg/L	108	74	123	
EP074-WF: 1,1-Dichloroethene	75-35-4	1	µg/L	<1	20 µg/L	100	75	120	
EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	20 µg/L	69.8	37	120	
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	20 µg/L	114	72	159	
EP074-WF: trans-1,2-Dichloroethene	156-60-5	1	µg/L	<1	20 µg/L	88.3	78	117	
EP074-WF: 1,1-Dichloroethane	75-34-3	1	µg/L	<1	20 µg/L	98.6	81	118	
EP074-WF: cis-1,2-Dichloroethene	156-59-2	1	µg/L	<1	20 µg/L	97.2	83	118	
EP074-WF: 1,1,1-Trichloroethane	71-55-6	1	µg/L	<1	20 µg/L	94.0	76	115	
EP074-WF: 1,1-Dichloropropylene	563-58-6	1	µg/L	<1	20 µg/L	93.4	75	117	
EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	20 µg/L	92.1	72	111	
EP074-WF: 1,2-Dichloroethane	107-06-2	1	µg/L	<1	20 µg/L	88.3	81	120	
EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	20 µg/L	95.4	78	116	
EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	20 µg/L	85.7	79	116	
EP074-WF: 1,1,2-Trichloroethane	79-00-5	1	µg/L	<1	20 µg/L	96.7	85	119	
EP074-WF: 1,3-Dichloropropane	142-28-9	1	µg/L	<1	20 µg/L	98.5	85	119	
EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	20 µg/L	89.7	76	120	
EP074-WF: 1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L	<1	20 µg/L	92.0	78	110	
EP074-WF: trans-1,4-Dichloro-2-butene	110-57-6	1	µg/L	<1	20 µg/L	93.3	64	118	
EP074-WF: cis-1,4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	20 µg/L	80.6	51	113	
EP074-WF: 1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L	<1	20 µg/L	104	85	121	
EP074-WF: 1,2,3-Trichloropropane	96-18-4	1	µg/L	<1	20 µg/L	98.9	84	118	
EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	20 µg/L	87.0	64	109	
EP074-WF: 1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	20 µg/L	93.0	65	115	
EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	20 µg/L	97.8	70	121	
EP074F: Halogenated Aromatic Compounds (QCLot: 894332)									
EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	20 µg/L	98.7	85	115	
EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	20 µg/L	94.5	82	116	
EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	20 µg/L	94.2	81	112	
EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	20 µg/L	91.5	80	110	
EP074-WF: 1,3-Dichlorobenzene	541-73-1	1	µg/L	<1	20 µg/L	93.4	80	110	
EP074-WF: 1,4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	20 µg/L	98.9	80	112	
EP074-WF: 1,2-Dichlorobenzene	95-50-1	1	µg/L	<1	20 µg/L	99.8	84	111	
EP074-WF: 1,2,4-Trichlorobenzene	120-82-1	1	µg/L	<1	20 µg/L	81.8	70	114	
EP074-WF: 1,2,3-Trichlorobenzene	87-61-6	1	µg/L	<1	20 µg/L	92.7	78	116	
EP074G: Trihalomethanes (QCLot: 894332)									
EP074-WF: Chloroform	67-66-3	1	µg/L	<1	20 µg/L	97.3	82	118	
EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	20 µg/L	93.8	75	112	
EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	20 µg/L	90.8	73	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	
EP074G: Trihalomethanes (QCLot: 894332) - continued									
EP074-WF: Bromoform	75-25-2	1	µg/L	<1	20 µg/L	89.3	68	107	
EP074-WF: Total Trihalomethanes	----	1	µg/L	<1	----	----	----	----	
EP074H: Naphthalene (QCLot: 894332)									
EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	92.6	80	116	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 889556)									
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	81.3	39	110	
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	93.2	40	124	
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	90.1	47	117	
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	94.7	51	118	
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	92.2	53	119	
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	85.0	51	113	
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	91.6	59	123	
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	88.6	58	123	
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	88.5	52	126	
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	88.6	55	123	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	97.4	52	131	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	100	57	126	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	100	56	126	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	110	53	123	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	109	53	125	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	110	53	125	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 889557)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	95.6	53	123	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	96.2	57	133	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	85.4	55	141	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894331)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	87.2	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894336)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	94.4	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894343)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	75.8	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 889557)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	91.2	54	122	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	88.7	56	132	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	90.0	51	137	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894331)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	83.9	65	125	



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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894336)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	90.4	65	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894343)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	72.0	65	125
EP080: BTEXN (QCLot: 894331)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	91.6	76	120
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	101	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	2	µg/L	<2	40 µg/L	95.7	72	130
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	98.3	78	128
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	112	71	129
EP080: BTEXN (QCLot: 894336)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	111	76	120
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	99.5	76	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	104	72	124
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	104	72	130
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	106	78	128
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	104	71	129
EP080: BTEXN (QCLot: 894343)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	89.2	76	120
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	83.1	76	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	80.9	72	124
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	83.5	72	130
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	92.0	78	128
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	108	71	129
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 890874)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	92.4	70	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	102	70	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	90.0	70	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	101	70	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	91.2	70	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	101	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 890874)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	99.6	70	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	76.0	70	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	86.0	70	130



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	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 890874) - continued									
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	88.4	70	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	98.2	70	130	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	96.6	70	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	95.2	70	130	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	92.4	70	130	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	95.6	70	130	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	97.8	70	130	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	98.7	70	124	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 890874)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	97.4	70	130	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	106	70	130	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	94.0	70	129	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	1.25 µg/L	92.9	70	129	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	110	70	126	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	82.2	70	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	94.2	70	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 890874)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	102	70	130	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	98.8	70	130	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	72.6	70	130	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	87.2	70	130	

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 889605)							
EM1706024-010	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	94.4	70	130
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)							
EM1705994-023	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	120	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 889604)							



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: 889604) - continued							
EM1706024-010	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	106	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 893500)							
EM1705827-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	92.2	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	95.4	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	95.9	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	96.0	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	69.4	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.2	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	96.6	75	131
EG020F: Dissolved Metals by ICP-MS (QCLot: 893504)							
EM1706071-003	GW72_120517	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	93.6	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	108	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	96.2	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	103	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	102	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	102	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	104	75	131
EG020T: Total Metals by ICP-MS (QCLot: 890740)							
EM1705599-006	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	101	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	95.8	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	98.3	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	88.7	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	110	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	97.8	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	100	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	100	74	116
EG035F: Dissolved Mercury by FIMS (QCLot: 893503)							
EM1705827-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	86.7	70	120
EG035F: Dissolved Mercury by FIMS (QCLot: 893505)							
EM1706071-005	GMW02_120517	EG035F: Mercury	7439-97-6	0.01 mg/L	86.3	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 898010)							
EM1705599-007	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	90.8	70	130
EK040P: Fluoride by PC Titrator (QCLot: 889859)							
EM1706071-002	GW40A/C_120517	EK040P: Fluoride	16984-48-8	5 mg/L	86.6	70	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 892314)							
EM1705964-012	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	112	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 892317)							
EM1706071-004	GW75_120517	EK055G: Ammonia as N	7664-41-7	1 mg/L	95.2	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 889603)							
EM1706024-010	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	96.2	80	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 892315)							
EM1705964-012	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	102	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 892316)							
EM1706071-004	GW75_120517	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 889606)							
EM1706024-010	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	98.5	79	123
EP005: Total Organic Carbon (TOC) (QCLot: 897711)							
EM1705994-019	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	91.6	80	114
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 894332)							
EM1706124-002	Anonymous	EP074-WF: Benzene	71-43-2	20 µg/L	115	76	128
		EP074-WF: Toluene	108-88-3	20 µg/L	109	72	132
EP074E: Halogenated Aliphatic Compounds (QCLot: 894332)							
EM1706124-002	Anonymous	EP074-WF: 1,1-Dichloroethene	75-35-4	20 µg/L	# 129	63	129
		EP074-WF: Trichloroethene	79-01-6	20 µg/L	99.4	64	126
EP074F: Halogenated Aromatic Compounds (QCLot: 894332)							
EM1706124-002	Anonymous	EP074-WF: Chlorobenzene	108-90-7	20 µg/L	105	81	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894331)							
EM1706124-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	112	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894336)							
EM1706071-010	QC110_120517	EP080: C6 - C9 Fraction	----	280 µg/L	88.9	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894343)							
EM1706027-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	70.0	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894331)							
EM1706124-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	106	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894336)							
EM1706071-010	QC110_120517	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	83.3	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894343)							
EM1706027-002	Anonymous						



Sub-Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
				Low	High		
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894343) - continued							
EM1706027-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	66.5	44	122
EP080: BTEXN (QCLot: 894331)							
EM1706124-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	104	68	130
		EP080: Toluene	108-88-3	20 µg/L	112	72	132
EP080: BTEXN (QCLot: 894336)							
EM1706071-010	QC110_120517	EP080: Benzene	71-43-2	20 µg/L	104	68	130
		EP080: Toluene	108-88-3	20 µg/L	98.9	72	132
EP080: BTEXN (QCLot: 894343)							
EM1706027-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	111	68	130
		EP080: Toluene	108-88-3	20 µg/L	85.8	72	132
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 890874)							
EM1706071-002	GW40A/C_120517	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	76.8	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	126	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	88.2	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	118	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	90.2	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	98.0	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 890874)							
EM1706071-002	GW40A/C_120517	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	112	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	93.0	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	78.2	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	102	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	129	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	90.2	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	97.8	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	83.6	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	91.0	50	130
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.5 µg/L	92.2	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	91.0	50	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 890874)							
EM1706071-002	GW40A/C_120517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	102	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	122	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	118	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	1.25 µg/L	110	50	130



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 890874) - continued							
EM1706071-002	GW40A/C_120517	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	98.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	97.0	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	94.8	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 890874)							
EM1706071-002	GW40A/C_120517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	122	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	122	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	95.6	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	65.0	50	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1706071	Page	: 1 of 14
Amendment	: 1		
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 15-May-2017
Site	: Fishermans Bend	Issue Date	: 05-Jun-2017
Sampler	: nk/mw/jm	No. of samples received	: 11
Order number	: 60537182 3.5	No. of samples analysed	: 11

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							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EM1706071--004	GW75_120517	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP074E: Halogenated Aliphatic Compounds	EM1706124--002	Anonymous	1,1-Dichloroethene	75-35-4	129 %	63-129%	Recovery greater than upper control limit

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							
GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	----	----	----	16-May-2017	12-May-2017	4
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	----	----	----	16-May-2017	14-May-2017	2
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural							
GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	----	----	----	16-May-2017	14-May-2017	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Fluoride by PC Titrator	1	11	9.09	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	8	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatle Fraction	0	14	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	8	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Method					
Matrix Spikes (MS) - Continued					
TRH - Semivolatiles Fraction	0	14	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	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)								
GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	16-May-2017	12-May-2017	*
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H)								
GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	17-May-2017	19-May-2017	✓
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P)								
GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	16-May-2017	26-May-2017	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G)								
GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	16-May-2017	09-Jun-2017	✓



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) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	22-May-2017	09-Jun-2017	✓	22-May-2017	09-Jun-2017	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	16-May-2017	09-Jun-2017	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	22-May-2017	09-Jun-2017	✓
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	18-May-2017	08-Nov-2017	✓
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC110_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC109_120517,	12-May-2017	17-May-2017	08-Nov-2017	✓	17-May-2017	08-Nov-2017	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	18-May-2017	09-Jun-2017	✓



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	
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC110_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC109_120517,	12-May-2017	----	----	----	19-May-2017	09-Jun-2017	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	16-May-2017	09-Jun-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	18-May-2017	09-Jun-2017	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	16-May-2017	14-May-2017	*
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	17-May-2017	09-Jun-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	16-May-2017	14-May-2017	*



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	
EP005: Total Organic Carbon (TOC)								
Amber VOC Vial - Sulfuric Acid (EP005) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	----	----	----	19-May-2017	09-Jun-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074C: Sulfonated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP074H: Naphthalene								
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW52_120517, MW1333_02_120517,	GW75_120517, QC106_120517	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓



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)) GW52_120517, GW72_120517, GMW02_120517, QC106_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517,	12-May-2017	17-May-2017	19-May-2017	✓	18-May-2017	26-Jun-2017	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC110_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC109_120517,	12-May-2017	17-May-2017	19-May-2017	✓	18-May-2017	26-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC109_120517,	QC110_120517	12-May-2017	18-May-2017	26-May-2017	✓	18-May-2017	26-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC111_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC108_120517,	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC110_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC109_120517,	12-May-2017	17-May-2017	19-May-2017	✓	18-May-2017	26-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC109_120517,	QC110_120517	12-May-2017	18-May-2017	26-May-2017	✓	18-May-2017	26-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC111_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC108_120517,	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓



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: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) QC109_120517,	QC110_120517	12-May-2017	18-May-2017	26-May-2017	✓	18-May-2017	26-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW52_120517, GW72_120517, GMW02_120517, QC106_120517, QC111_120517	GW40A/C_120517, GW75_120517, MW1333_02_120517, QC108_120517,	12-May-2017	18-May-2017	26-May-2017	✓	19-May-2017	26-May-2017	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW40A/C_120517, MW1333_02_120517	GW72_120517,	12-May-2017	----	----	----	17-May-2017	08-Nov-2017	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) GW40A/C_120517, MW1333_02_120517	GW72_120517,	12-May-2017	----	----	----	17-May-2017	08-Nov-2017	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) GW40A/C_120517, MW1333_02_120517	GW72_120517,	12-May-2017	----	----	----	17-May-2017	08-Nov-2017	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW40A/C_120517, MW1333_02_120517	GW72_120517,	12-May-2017	----	----	----	17-May-2017	08-Nov-2017	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) GW40A/C_120517, MW1333_02_120517	GW72_120517,	12-May-2017	----	----	----	17-May-2017	08-Nov-2017	✓



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	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	29	13.79	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	4	31	12.90	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	11	9.09	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	31	12.90	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	8	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	14	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	6	53	11.32	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	29	6.90	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	31	6.45	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	31	6.45	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	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							
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	53	5.66	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	53	5.66	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	8	0.00	5.00	*	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	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	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Matrix Spikes (MS) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	14	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	53	5.66	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	16	6.25	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)
Ammonium as N	EK055G-NH ₄	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH ₃ G. 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)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. 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 SO ₄ DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. 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)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.
<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.



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

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Ph: 07 4799 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 69 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		<input checked="" type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Melbourne		<input type="checkbox"/> Non Standard or urgent TAT (List due date):		COC SEQUENCE NUMBER (Circle)		Custody Seal intact: Yes No N/A	
PROJECT:		ALS QUOTE NO.:		COC: 1 2 3 4 5 6 7		Pres/ice frozen/ice packs present upon receipt: Yes No N/A	
ORDER NUMBER: 60537182				OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: C	
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		RECEIVED BY:		RECEIVED BY:	
SAMPLER: NK/MW/JM		SAMPLER MOBILE:		DATE/TIME:		DATE/TIME:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		12/5/17 4:30		15/11/20	
Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com		Email Invoice to: Averyll.Coyne@acoom.com					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to 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 codes below) <i>(refer to)</i>	TOTAL CONTAINERS	pH, TDS, TOC	TRH(C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cu, Ni, K, Cl, HCO3, NO3, NO2, NH4, NH3, PO4, SO4, F and Mn)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)		Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10 BTEXN
	1	GWS2-120517	12/5/17	W	Various	10	X	X	X	X	X		X		X	X		PH EL MIS 6.61, 1750
	2	GW40A/C-120517	"	"	"	12	X	X	X	X		X	X	X	X	X		4.69, 4690
	3	GW72-120517	"	"	"	12	X	X	X	X		X	X	X	X	X		6.25, 920
	4	GW75-120517	"	"	"	10	X	X	X	X		X	X	X	X	X		6.04, 900
	5	BMW02-120517	"	"	"	10	X	X	X	X		X	X	X	X	X		7.16, 1307
	6	MW1533_02_120517	"	"	"	12	X	X	X	X		X	X	X	X	X		6.85, 2220
	7	QC106-120517				10	X	X	X	X		X			X	X		
	8	QC108-120517				2											X	
	9	QC109-120517				4		X				X				X		
	10	QC110-120517				4		X				X				X		
	11	QC111-120517				1											X	
						TOTAL												

Environmental Division
Melbourne
Work Order Reference
EM1706071



Telephone : +61-3-8549 9600

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORV = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; A

erved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
S = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; 3g.



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ALS Laboratory:
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ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0800 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 46 Callamondah Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9800 E: samples.melbourne@alsglobal.com

MUDGEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com

PERTH 10 Hod Way Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2184
Ph: 02 8784 8556 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0800 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		<input checked="" type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Melbourne		<input type="checkbox"/> Non Standard or urgent TAT (List due date):		COC SEQUENCE NUMBER (Circle)		Custody Seal Intact: Yes No N/A	
PROJECT:		ALS QUOTE NO.:		COC: 1 2 3 4 5 6 7		Fridge / frozen ice blocks present upon receipt: Yes No N/A	
ORDER NUMBER: 60537182				OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: C	
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502				Other comment:	
SAMPLER: NK/MW/JM		SAMPLER MOBILE:		RELINQUISHED BY:		RECEIVED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME: 12/5/17 4:30		DATE/TIME: 15/5, 11-20	
Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com							
Email invoice to: Averyll.Coyne@aceom.com							

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS			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						
	MATRIX	SOLID (S) WATER (W)	DATE / TIME	TYPE & PRESERVATIVE codes below	(refer to)	TOTAL CONTAINERS	pH, TDS, TOC	TRH(C6-C40)	PAH	Nitrogen Oxides/Sulfur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cr, HCO3, NO2, NH4, NiS, PO4, SO4, F and Mn)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Tolu, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)		Total Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10				
																			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.			
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below	(refer to)	TOTAL CONTAINERS	pH, TDS, TOC	TRH(C6-C40)	PAH	Nitrogen Oxides/Sulfur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cr, HCO3, NO2, NH4, NiS, PO4, SO4, F and Mn)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Tolu, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	Total Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10	BTEXN	PH EL M/S		
	1	GWS2-120517	12/5/17	W	Various		10	X	X	X	X	X	X	X		X	X	X			6.61, 1750	
	2	GW40AIC-120517	"	"	"		12	X	X	X	X		X	X	X	X	X	X			4.69, 4690	
	3	GW72-120517	"	"	"		12	X	X	X	X		X	X	X	X	X	X			6.25, 920	
	4	GW75-120517	"	"	"		10	X	X	X	X	X		X		X	X	X			6.04, 900	
	5	BMW02-120517	"	"	"		10	X	X	X	X		X	X		X	X	X			7.16, 1307	
	6	MW1533-02-120517	"	"	"		12	X	X	X	X	X		X	X	X	X	X			6.85, 2220	
	7	QC106-120517					10	X	X	X	X	X		X		X	X	X				
	8	QC108-120517					1												X			
	9	QC109-120517					4		X				X					X				
	10	QC110-120517					4		X				X					X				
	11	QC111-120517					1											X				
	TOTAL																					

Environmental Division
Melbourne
Work Order Reference
EM1706071



Telephone : +61-3-8549 9800

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; OR = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; A

erved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
S = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; 3ag.

UB15/5.

Larissa Burns

Subject: FW: EM1705994 - AECOMAU - 60537182

From: Kaur, Navjot [<mailto:Navjot.Kaur@aecom.com>]

Sent: Monday, 15 May 2017 4:38 PM

To: Coyne, Averyll <Averyll.Coyne@aecom.com>; Peter Ravlic <peter.ravlic@alsglobal.com>

Cc: Williams, Megan <Megan.Williams@aecom.com>; Muller, Jacob <Jacob.Muller@aecom.com>

Subject: RE: EM1705994 - AECOMAU - 60537182

Hi Peter

Here are the pH and temp for some of the samples. The remaining ones, we will collate it tomorrow morning and send them to you.

For the vials, we did not receive the TOC vials, so we are using the BTEX vials only.

EM1706071

Well ID	pH	Temp
GW81	6.87	19.6
GW80	6.29	19
GW67	7.38	19.2
GW43	5.89	18.9
GW82		
GW57	6.13	18.6
GW77		
GW74		
GW76		
GW42AC	5.39	18.5
GW73	7.02	22.1
GMW03	7.21	21.1
DAMW5_02	6.86	19.6
GW62		
GMW83		
MW9A1		
MW1371_02		
GW51	6.03	18
GW41	7.03	19.5
GW48	6.6	20
GW53	6.1	19
1 GW52	6.61	17.2
2 GW40A/C	4.69	19.8
3 GW72	6.25	20.8
4 GW75	6.04	19.5
5 GMW02		
6 MW1333_02		

Regards

Navjot Kaur

Senior Environmental Scientist

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Navjot.Kaur@aecom.com

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From: Coyne, Averyll

Sent: Monday, 15 May 2017 2:29 PM

To: Peter Ravlic

Cc: Kaur, Navjot; Williams, Megan; Muller, Jacob

Subject: RE: EM1705994 - AECOMAU - 60537182

Importance: High

Hi Peter,

Thank you for the email. There is no need to analyse for DOC, just TOC. Please prioritise all volatile analysis before TOC if you find there is limited water for analysis.

I will provide your comments below to our field staff.

Navjot is currently following up on the temperature information for you. I believe you need the temperature data for all of the samples sent to date.

Kind Regards

Averyll

Averyll Coyne

Principal Environmental Scientist

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Averyll.Coyne@aecom.com

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From: Peter Ravlic [<mailto:peter.ravlic@alsglobal.com>]

Sent: Monday, 15 May 2017 2:23 PM

To: Coyne, Averyll

Subject: EM1705994 - AECOMAU - 60537182

Hi Averyll

In relation to the attached samples we rec'd, we have rec'd a number of TOC vials (noted below) which have been note on the vial as filtered which would mean that the vials are now DOC vials and not TOC vials.

001-004, 009-10, 014-15, 021-23 → Field filtered for TOC (logged as DOC vials)

Did you need DOC analysed for these filtered vials instead?

As we have rec'd 2 vials for volatiles, we will need to use one of these for TOC instead

Can you also please chase up the temperature data and all field data for sample 023 as we need the pH and Temp data for NH4 calculation

Thanks

Regards

Peter Ravlic

Client Services Officer – Springvale

Environmental



T +61 3 8549 9600
F +61 3 8549 9626
Peter.Ravlic@alsglobal.com
2-4 Westall Rd
Springvale Vic 3171
Australia

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BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callamondah Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 5372 6735 E: mudgee@mail@alsglobal.com

NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090
Ph: 08 6208 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
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TOWNSVILLE 14-16 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS : <input checked="" type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Melbourne		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) <input type="checkbox"/> Non Standard or urgent TAT (List due date):		Custody/Seal intact? Yes No N/A	
PROJECT:		ALS QUOTE NO.:		Preserve/frozen (ice bricks present upon receipt)? Yes No N/A	
ORDER NUMBER: 60537182		COC SEQUENCE NUMBER (Circle)		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		Other comment	
SAMPLER: NK/MW/JM		SAMPLER MOBILE:		RECEIVED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY:	
Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com		RELINQUISHED BY:		RECEIVED BY:	
Email Invoice to: Averyll.Coyne@aecom.com		DATE/TIME: 12/5/17 4:30		DATE/TIME: 15/11/17	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS			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		
	MATRIX: SOLID (S)/WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below	(refer to)	TOTAL CONTAINERS	PH, TDS, TOC	TRH(C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg and Mo)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)		Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10
																		PH EC MS
	GWS2-120517	12/5/17	W	Various		10	X	X	X	X	X	X	X	X	X	X	X	6.61, 1750
	GW40A/C-120517	"	"	"		12	X	X	X	X	X	X	X	X	X	X	X	4.69, 4690
	GW72-120517	"	"	"		12	X	X	X	X	X	X	X	X	X	X	X	6.25, 920
	GW75-120517	"	"	"		10	X	X	X	X	X	X	X	X	X	X	X	6.04, 900
	BMW02-120517	"	"	"		10	X	X	X	X	X	X	X	X	X	X	X	7.16, 1307
	MW1533-02-120517	"	"	"		12	X	X	X	X	X	X	X	X	X	X	X	6.85, 2220
	QC106-120517					10	X	X	X	X	X	X	X	X	X	X	X	
	QC108-120517					1												X
	QC109-120517					4		X				X						X
	QC110-120517					4		X				X						X
	QC111-120517					1												X
						TOTAL												

Environmental Division
Melbourne
Work Order Reference
EM1706071



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Telephone : +61-3-8549 9600

erved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
S = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; 3g.

13/11/17

Larissa Burns

Subject: FW: EM1705994 - AECOMAU - 60537182

From: Kaur, Navjot [<mailto:Navjot.Kaur@aecom.com>]

Sent: Monday, 15 May 2017 4:38 PM

To: Coyne, Averyll <Averyll.Coyne@aecom.com>; Peter Ravlic <peter.ravlic@alsglobal.com>

Cc: Williams, Megan <Megan.Williams@aecom.com>; Muller, Jacob <Jacob.Muller@aecom.com>

Subject: RE: EM1705994 - AECOMAU - 60537182

Hi Peter

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For the vials, we did not receive the TOC vials, so we are using the BTEX vials only.

EM1706071

Well ID	pH	Temp
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GW74		
GW76		
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GW73	7.02	22.1
GMW03	7.21	21.1
DAMW5_02	6.86	19.6
GW62		
GMW83		
MW9A1		
MW1371_02		
GW51	6.03	18
GW41	7.03	19.5
GW48	6.6	20
GW53	6.1	19
1 GW52	6.61	17.2
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4 GW75	6.04	19.5
5 GMW02		
6 MW1333_02		

Regards

Navjot Kaur

Senior Environmental Scientist

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From: Coyne, Averyll
Sent: Monday, 15 May 2017 2:29 PM
To: Peter Ravlic
Cc: Kaur, Navjot; Williams, Megan; Muller, Jacob
Subject: RE: EM1705994 - AECOMAU - 60537182
Importance: High

Hi Peter,

Thank you for the email. There is no need to analyse for DOC, just TOC. Please prioritise all volatile analysis before TOC if you find there is limited water for analysis.

I will provide your comments below to our field staff.

Navjot is currently following up on the temperature information for you. I believe you need the temperature data for all of the samples sent to date.

Kind Regards
Averyll

Averyll Coyne
Principal Environmental Scientist
D +61 3 9653 8072 M +61 499 252 502
Averyll.Coyne@aecom.com

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From: Peter Ravlic [<mailto:peter.ravlic@alsglobal.com>]
Sent: Monday, 15 May 2017 2:23 PM
To: Coyne, Averyll
Subject: EM1705994 - AECOMAU - 60537182

Hi Averyll

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001-004, 009-10, 014-15, 021-23 → Field filtered for TOC (logged as DOC vials)

Did you need DOC analysed for these filtered vials instead?

As we have rec'd 2 vials for volatiles, we will need to use one of these for TOC instead

Can you also please chase up the temperature data and all field data for sample 023 as we need the pH and Temp data for NH4 calculation

Thanks

Regards

Peter Ravlic

Client Services Officer – Springvale

Environmental



T +61 3 8549 9600

F +61 3 8549 9626

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Springvale Vic 3171

Australia

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EM1706071.

Larissa Burns

Subject: FW: EM1705994 - AECOMAU - 60537182

From: Kaur, Navjot [<mailto:Navjot.Kaur@aecom.com>]

Sent: Wednesday, 17 May 2017 12:47 PM

To: Peter Ravlic <peter.ravlic@alsglobal.com>; Coyne, Averyll <Averyll.Coyne@aecom.com>

Cc: Williams, Megan <Megan.Williams@aecom.com>; Muller, Jacob <Jacob.Muller@aecom.com>

Subject: RE: EM1705994 - AECOMAU - 60537182

Hi Peter

See below for the missing pH and temp

Well ID	pH	Temp
GW81	6.87	19.6
GW80	6.29	19
GW67	7.38	19.2
GW43	5.89	18.9
GW82	6.32	18.9
GW57	6.13	18.6
GW77	7.14	19.8
GW74	6.94	22.2
GW76	7.3	21.8
GW42AC	5.39	18.5
GW73	7.02	22.1
GMW03	7.21	21.1
DAMW5_02	6.86	19.6
GW62	7.23	17.7
GMW83	5.93	19.9
MW9A1	9.96	21.7
MW1371_02	6.16	19.2
GW51	6.03	18
GW41	7.03	19.5
GW48	6.6	20
GW53	6.1	19
GW52	6.61	17.2
GW40A/C	4.69	19.8
GW72	6.25	20.8
GW75	6.04	19.5
GMW02	7.16	17.5
MW1333_02	6.85	20.1
QC101_110517	6.60	20.0
QC106_120517	6.61	17.2

Regards

Navjot Kaur

Senior Environmental Scientist

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Navjot.Kaur@aecom.com

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CERTIFICATE OF ANALYSIS

Work Order : **EM1706246**
Client : **AECOM Australia Pty Ltd**
Contact : **MS AVERYLL COYNE**
Address : **COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET
MELBOURNE VIC, AUSTRALIA 3004**
Telephone : **+61 03 9653 1234**
Project : **60537182**
Order number : **60537182 3.5**
C-O-C number : **----**
Sampler : **NK/MW/JM**
Site : **Fishermans Bend**
Quote number : **ME/199/16**
No. of samples received : **23**
No. of samples analysed : **23**

Page : 1 of 35
Laboratory : Environmental Division Melbourne
Contact : Carol Walsh
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Date Samples Received : 17-May-2017 13:45
Date Analysis Commenced : 18-May-2017
Issue Date : 24-May-2017 18:11



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- TDS by method EA-015 for EM1706246 #1,10,16 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- **EP074-WF: Particular samples has LOR raised for Idomethane due to matrix interference.**
- ALS is not NATA accredited for the analysis of ammonium as N.
- 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 iron for #10.
- Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate; and major cations - calcium, magnesium, potassium, sodium, iron and ammonia for #21.
- **EP074-WF: Sample EM1706246-012 has LOR raised for Acetone due to laboratory background.**
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- 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	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.11	7.14	7.44	6.76	7.83	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	416	980	2760	2200	2540	
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	168	296	1660	1330	1160	
Total Alkalinity as CaCO3	----	1	mg/L	168	296	1660	1330	1160	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	47	447	187	<1	<1	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	105	814	233	41	25	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	32	45	839	696	937	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	43	173	95	96	95	
Magnesium	7439-95-4	1	mg/L	9	46	150	123	94	
Sodium	7440-23-5	1	mg/L	41	79	777	517	813	
Potassium	7440-09-7	1	mg/L	4	14	106	79	57	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.07	0.06	0.03	0.04	0.05	
Arsenic	7440-38-2	0.001	mg/L	0.010	0.002	0.004	0.011	0.007	
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	0.004	0.003	0.005	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.022	0.285	0.211	0.216	0.552	
Nickel	7440-02-0	0.001	mg/L	0.004	0.003	0.006	0.012	0.018	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.015	0.025	0.008	0.012	0.008	
Iron	7439-89-6	0.05	mg/L	1.51	3.98	14.8	18.3	4.92	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	14.7	19.9	0.74	11.0	6.80	
Arsenic	7440-38-2	0.001	mg/L	0.030	0.043	0.007	0.068	0.014	



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Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0007	0.0008	0.0103	0.0010	
Chromium	7440-47-3	0.001	mg/L	0.040	0.065	0.010	0.055	0.029	
Copper	7440-50-8	0.001	mg/L	0.007	0.061	0.038	0.184	0.076	
Nickel	7440-02-0	0.001	mg/L	0.023	0.058	0.016	0.077	0.053	
Lead	7439-92-1	0.001	mg/L	0.020	0.027	0.060	0.595	0.210	
Zinc	7440-66-6	0.005	mg/L	0.082	0.208	0.621	1.74	0.839	
Manganese	7439-96-5	0.001	mg/L	0.073	0.402	0.242	0.452	0.688	
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	19.3	40.7	20.3	61.8	21.2	
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.7	0.7	0.2	0.1	0.7	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.34	2.21	80.3	73.6	10.3	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.34	2.20	79.8	73.5	10.1	
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	0.02	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.02	<0.01	<0.01	<0.01	0.02	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	<0.01	<0.01	<0.01	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	<0.01	<0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	5.24	16.5	60.7	46.2	49.6	
Total Cations	----	0.01	meq/L	4.77	16.2	53.6	39.4	49.3	
Ionic Balance	----	0.01	%	4.65	0.85	6.24	7.92	0.31	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	8	9	39	73	51	



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Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
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	----	----	3	----	----	
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	----	----	4	----	----	
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	----	----	



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Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	----	----	<2	----	----	
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	----	----	
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	----	----	



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Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
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	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	1.4	4.1	<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	4.1	<1.0	
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	<1.0	1.5	<1.0	
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	<1.0	2.0	<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	1.4	11.7	<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	30	<20	30	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	160	460	<50	
C15 - C28 Fraction	----	100	µg/L	<100	280	700	610	540	
C29 - C36 Fraction	----	50	µg/L	<50	<50	70	110	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	280	930	1180	540	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	20	<20	40	<20	



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Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	290	600	110	
>C16 - C34 Fraction	----	100	µg/L	<100	250	590	520	480	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	250	880	1120	590	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	290	600	110	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	11	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	4	<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	16	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	0.03	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	<0.02	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	----	0.02	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	<0.02	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	<0.01	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	<0.02	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	<0.1	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	<0.02	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	0.05	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	<0.02	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	<0.01	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	<0.02	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	<0.02	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	<0.02	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	<0.02	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	<0.02	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	<0.05	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	<0.02	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	----	----	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	<0.02	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	<0.02	----	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	<0.05	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	<0.05	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	<0.05	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	<0.05	----	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	----	0.10	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	0.02	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	0.10	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	----	----	107	----	----	
Toluene-D8	2037-26-5	1	%	----	----	116	----	----	
4-Bromofluorobenzene	460-00-4	1	%	----	----	116	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	33.4	30.4	32.1	37.7	35.2	
2-Chlorophenol-D4	93951-73-6	1	%	83.1	81.2	78.2	89.4	86.3	
2,4,6-Tribromophenol	118-79-6	1	%	61.0	75.7	79.2	95.7	84.4	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	78.1	80.5	73.3	83.2	79.6	
Anthracene-d10	1719-06-8	1	%	80.8	80.3	77.0	85.2	87.6	
4-Terphenyl-d14	1718-51-0	1	%	81.9	81.5	78.6	85.3	87.2	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	97.8	96.9	101	109	96.2	
Toluene-D8	2037-26-5	2	%	102	101	120	122	101	
4-Bromofluorobenzene	460-00-4	2	%	116	117	129	126	118	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	----	70.1	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time		16-May-2017 00:00			16-May-2017 00:00		16-May-2017 00:00		16-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	----	----	----	7.12	6.93	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	1680	124	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	185	43	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	185	43	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	201	<1	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	248	28	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	----	----	----	776	6	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	----	----	----	104	4	
Magnesium	7439-95-4	1	mg/L	----	----	----	53	5	
Sodium	7440-23-5	1	mg/L	----	----	----	417	4	
Potassium	7440-09-7	1	mg/L	----	----	----	21	2	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.10	0.11	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	0.025	0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	0.003	0.002	
Copper	7440-50-8	0.001	mg/L	----	----	----	0.002	<0.001	
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.049	0.017	
Nickel	7440-02-0	0.001	mg/L	----	----	----	0.004	0.005	
Selenium	7782-49-2	0.01	mg/L	----	----	----	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	----	0.012	0.007	
Iron	7439-89-6	0.05	mg/L	----	----	----	10.2	2.02	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	----	<0.01	----	0.70	11.0	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	0.100	0.010	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	0.006	0.026	
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	0.004	0.004	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	0.008	0.020	
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	0.006	0.008	
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	0.023	0.033	
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.055	0.057	
Selenium	7782-49-2	0.01	mg/L	----	<0.01	----	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	----	<0.05	----	20.2	18.9	
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	----	<0.0001	----	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	----	----	----	0.2	0.9	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	1.64	0.22	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	1.64	0.22	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	----	----	----	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	----	----	----	0.03	0.03	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	0.03	0.03	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	0.05	0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	----	----	----	29.8	1.03	
Total Cations	----	0.01	meq/L	----	----	----	----	0.94	
Total Cations	----	0.01	meq/L	----	----	----	28.2	----	
Ionic Balance	----	0.01	%	----	----	----	----	4.28	
Ionic Balance	----	0.01	%	----	----	----	2.66	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	----	----	----	32	7	
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	----	
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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	----	----	----	10	----	
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	----	
1,1,1,2,2-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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP074F: Halogenated Aromatic Compounds - Continued									
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	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	----	----	----	<1.0	<1.0	
Acenaphthylene	208-96-8	1	µg/L	----	----	----	<1.0	<1.0	
Acenaphthene	83-32-9	1	µg/L	----	----	----	<1.0	<1.0	
Fluorene	86-73-7	1	µg/L	----	----	----	<1.0	<1.0	
Phenanthrene	85-01-8	1	µg/L	----	----	----	<1.0	<1.0	
Anthracene	120-12-7	1	µg/L	----	----	----	<1.0	<1.0	
Fluoranthene	206-44-0	1	µg/L	----	----	----	<1.0	<1.0	
Pyrene	129-00-0	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(a)anthracene	56-55-3	1	µg/L	----	----	----	<1.0	<1.0	
Chrysene	218-01-9	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(k)fluoranthene	207-08-9	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	----	----	<0.5	<0.5	
Indeno(1,2,3.cd)pyrene	193-39-5	1	µg/L	----	----	----	<1.0	<1.0	
Dibenz(a,h)anthracene	53-70-3	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(g,h,i)perylene	191-24-2	1	µg/L	----	----	----	<1.0	<1.0	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	----	----	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	----	----	<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	
C15 - C28 Fraction	----	100	µg/L	----	<100	----	<100	<100	
C29 - C36 Fraction	----	50	µg/L	----	<50	----	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	----	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
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	
>C16 - C34 Fraction	----	100	µg/L	----	<100	----	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	----	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	----	<100	<100	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<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	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	----	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	----	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	----	----	----	<0.02	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	----	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	----	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	----	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	----	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	----	0.04	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	----	<0.02	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	----	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	----	----	----	0.04	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	----	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	----	0.04	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	----	----	----	108	----	
Toluene-D8	2037-26-5	1	%	----	----	----	115	----	
4-Bromofluorobenzene	460-00-4	1	%	----	----	----	106	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	----	----	----	34.2	33.0	
2-Chlorophenol-D4	93951-73-6	1	%	----	----	----	81.8	81.4	
2,4,6-Tribromophenol	118-79-6	1	%	----	----	----	75.4	73.6	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	----	----	----	76.7	75.2	
Anthracene-d10	1719-06-8	1	%	----	----	----	79.5	86.8	
4-Terphenyl-d14	1718-51-0	1	%	----	----	----	79.4	88.9	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	96.4	94.9	85.2	108	92.8	
Toluene-D8	2037-26-5	2	%	92.1	87.3	82.9	113	90.7	
4-Bromofluorobenzene	460-00-4	2	%	102	107	101	124	105	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	----	----	----	78.5	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.75	6.85	----	----	7.59	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	10100	6130	----	----	9210	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	804	1230	----	----	452	
Total Alkalinity as CaCO3	----	1	mg/L	804	1230	----	----	452	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	996	1150	----	----	1010	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	1600	1700	----	----	1480	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	5510	1580	----	----	5140	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	272	309	----	----	265	
Magnesium	7439-95-4	1	mg/L	493	222	----	----	375	
Sodium	7440-23-5	1	mg/L	2900	1370	----	----	2690	
Potassium	7440-09-7	1	mg/L	98	172	----	----	134	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.03	0.01	----	----	0.04	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.004	----	----	0.006	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.003	0.002	----	----	0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	0.005	----	----	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	0.003	----	----	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.038	0.513	----	----	0.232	
Nickel	7440-02-0	0.001	mg/L	0.119	0.054	----	----	0.044	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.014	0.026	----	----	0.014	
Iron	7439-89-6	0.05	mg/L	1.22	0.39	----	----	1.07	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	3.30	19.6	<0.01	----	6.42	
Arsenic	7440-38-2	0.001	mg/L	0.007	0.046	<0.001	----	0.016	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.013	0.060	<0.001	----	0.017	
Copper	7440-50-8	0.001	mg/L	0.005	0.038	<0.001	----	0.011	
Nickel	7440-02-0	0.001	mg/L	0.147	0.106	<0.001	----	0.056	
Lead	7439-92-1	0.001	mg/L	0.003	0.129	<0.001	----	0.006	
Zinc	7440-66-6	0.005	mg/L	0.106	0.150	<0.005	----	0.028	
Manganese	7439-96-5	0.001	mg/L	0.068	0.681	----	----	0.282	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	<0.01	
Iron	7439-89-6	0.05	mg/L	7.12	34.9	<0.05	----	9.38	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	<0.0001	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.3	0.9	----	----	0.6	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	11.2	2.66	----	----	3.61	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	11.1	2.66	----	----	3.60	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.11	----	----	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.12	102	----	----	0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.12	102	----	----	0.01	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.73	0.01	----	----	0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	192	93.1	----	----	175	
Total Cations	----	0.01	meq/L	183	97.7	----	----	164	
Ionic Balance	----	0.01	%	2.52	2.41	----	----	3.10	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	44	56	----	----	13	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
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	
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	<10	<20	----	----	<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	5	<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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	<3	<1	----	----	<3	
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	75	<1	----	----	4	
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	<1	----	----	<1	
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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	110	<100	----	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	110	<100	----	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	<100	
EP080: BTEXN									
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	%	119	91.8	----	----	105	
Toluene-D8	2037-26-5	1	%	121	88.1	----	----	104	
4-Bromofluorobenzene	460-00-4	1	%	121	89.1	----	----	108	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	37.1	27.9	----	----	36.8	
2-Chlorophenol-D4	93951-73-6	1	%	89.6	63.2	----	----	85.8	
2,4,6-Tribromophenol	118-79-6	1	%	76.8	71.1	----	----	70.5	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	78.1	59.1	----	----	77.4	
Anthracene-d10	1719-06-8	1	%	87.8	78.1	----	----	81.0	
4-Terphenyl-d14	1718-51-0	1	%	87.0	84.0	----	----	82.6	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	114	91.5	86.5	89.6	99.3	
Toluene-D8	2037-26-5	2	%	123	88.9	81.4	85.4	108	
4-Bromofluorobenzene	460-00-4	2	%	129	105	92.1	111	125	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.41	7.44	7.60	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2020	12800	4900	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	726	1220	652	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	726	1220	652	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	135	1340	306	----	----	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	221	1970	515	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	502	6510	2560	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	154	429	224	----	----	
Magnesium	7439-95-4	1	mg/L	68	434	100	----	----	
Sodium	7440-23-5	1	mg/L	360	3840	1450	----	----	
Potassium	7440-09-7	1	mg/L	16	136	56	----	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.40	0.08	0.04	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.020	0.010	0.006	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0005	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	0.007	0.004	0.002	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	0.005	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.679	0.983	0.623	----	----	
Nickel	7440-02-0	0.001	mg/L	0.026	0.059	0.057	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	0.010	0.028	0.006	----	----	
Iron	7439-89-6	0.05	mg/L	2.40	11.5	1.13	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	38.5	8.75	11.4	<0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.085	0.024	0.036	<0.001	<0.001	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0009	0.0002	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.130	0.028	0.037	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.032	0.021	0.029	<0.001	<0.001	
Nickel	7440-02-0	0.001	mg/L	0.105	0.086	0.122	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	0.061	0.013	0.076	<0.001	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.121	0.073	0.135	<0.005	<0.005	
Manganese	7439-96-5	0.001	mg/L	0.878	1.13	0.793	----	----	
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	27.8	24.1	19.8	<0.05	<0.05	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	<0.1	1.3	0.9	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	3.18	10.5	7.77	----	----	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	3.18	10.5	7.74	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.04	<0.01	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	4.12	<0.01	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	4.16	<0.01	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.50	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	31.5	236	91.6	----	----	
Total Cations	----	0.01	meq/L	29.3	228	83.9	----	----	
Ionic Balance	----	0.01	%	3.50	1.79	4.39	----	----	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	73	67	27	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
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	----	----	----	
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	<10	<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	1	<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	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	<2	<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	----	----	----	
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	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
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	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	<1.0	----	----	
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	<1.0	----	----	
Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	<1.0	----	----	
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	<1.0	----	----	
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	<1.0	----	----	
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	<1.0	----	----	
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	<1.0	----	----	
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	<1.0	----	----	
Chrysene	218-01-9	1	µg/L	<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	----	----	
Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	<1.0	----	----	
Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	<1.0	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	120	130	350	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	120	130	350	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	130	130	310	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	130	130	310	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
EP080: BTEXN									
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	%	110	95.8	----	----	----	
Toluene-D8	2037-26-5	1	%	120	88.7	----	----	----	
4-Bromofluorobenzene	460-00-4	1	%	117	94.8	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	30.0	36.6	31.8	----	----	
2-Chlorophenol-D4	93951-73-6	1	%	74.6	87.9	79.2	----	----	
2,4,6-Tribromophenol	118-79-6	1	%	77.5	78.8	71.8	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	75.8	83.0	71.6	----	----	
Anthracene-d10	1719-06-8	1	%	84.7	88.5	74.0	----	----	
4-Terphenyl-d14	1718-51-0	1	%	78.7	81.4	67.9	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	106	93.6	112	90.4	93.0	
Toluene-D8	2037-26-5	2	%	125	89.6	125	79.8	86.2	
4-Bromofluorobenzene	460-00-4	2	%	124	109	128	90.4	94.9	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			F3_170517	QC117_170517	QC118_170517	----	----
Client sampling date / time		16-May-2017 00:00			16-May-2017 00:00	16-May-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1706246-021	EM1706246-022	EM1706246-023	-----	-----	
				Result	Result	Result	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.56	----	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	282	----	----	----	----	
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	220	----	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	220	----	----	----	----	
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	13	----	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	14	----	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	17	----	----	----	----	
Magnesium	7439-95-4	1	mg/L	17	----	----	----	----	
Sodium	7440-23-5	1	mg/L	29	----	----	----	----	
Potassium	7440-09-7	1	mg/L	14	----	----	----	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.03	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.003	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.640	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.024	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.013	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	6.97	----	----	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	2.93	<0.01	<0.01	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.006	<0.001	<0.001	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	F3_170517	QC117_170517	QC118_170517	----	----
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1706246-021	EM1706246-022	EM1706246-023	-----	-----	
				Result	Result	Result	----	----	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	0.015	<0.001	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	0.009	<0.001	<0.001	----	----	
Nickel	7440-02-0	0.001	mg/L	0.041	<0.001	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	0.012	<0.001	<0.001	----	----	
Zinc	7440-66-6	0.005	mg/L	0.161	<0.005	<0.005	----	----	
Manganese	7439-96-5	0.001	mg/L	0.841	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Iron	7439-89-6	0.05	mg/L	17.2	<0.05	<0.05	----	----	
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	<0.0001	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.5	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	1.78	----	----	----	----	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	1.78	----	----	----	----	
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	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	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	4.79	----	----	----	----	
Total Cations	----	0.01	meq/L	4.37	----	----	----	----	
Ionic Balance	----	0.01	%	4.65	----	----	----	----	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	7	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	F3_170517	QC117_170517	QC118_170517	----	----
Client sampling date / time					16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1706246-021	EM1706246-022	EM1706246-023	-----	-----	
				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	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----	
C15 - C28 Fraction	----	100	µg/L	230	<100	<100	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	230	<50	<50	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	230	<100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	230	<100	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	F3_170517	QC117_170517	QC118_170517	----	----
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1706246-021	EM1706246-022	EM1706246-023	-----	-----	
				Result	Result	Result	----	----	
EP080: BTEXN - Continued									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	31.1	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	1	%	79.3	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	1	%	74.1	----	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	73.8	----	----	----	----	
Anthracene-d10	1719-06-8	1	%	79.0	----	----	----	----	
4-Terphenyl-d14	1718-51-0	1	%	71.3	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	97.2	93.9	91.1	----	----	
Toluene-D8	2037-26-5	2	%	91.2	89.6	82.9	----	----	
4-Bromofluorobenzene	460-00-4	2	%	96.9	93.9	91.8	----	----	



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
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	130

QUALITY CONTROL REPORT

Work Order	: EM1706246	Page	: 1 of 23
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 17-May-2017
Order number	: 60537182 3.5	Date Analysis Commenced	: 18-May-2017
C-O-C number	: ----	Issue Date	: 24-May-2017
Sampler	: NK/MW/JM		
Site	: Fishermans Bend		
Quote number	: ME/199/16		
No. of samples received	: 23		
No. of samples analysed	: 23		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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.

Signatories	Position	Accreditation Category
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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: 894514)									
EM1706246-002	GW46_160517	EA005-P: pH Value	----	0.01	pH Unit	7.14	7.17	0.419	0% - 20%
EM1706228-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.57	5.52	0.902	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 894516)									
EM1706255-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.97	6.97	0.00	0% - 20%
EM1706246-017	GW50_160517	EA005-P: pH Value	----	0.01	pH Unit	7.44	7.44	0.00	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 897094)									
EM1706104-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	52	47	8.75	No Limit
EM1706143-009	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	80	78	3.80	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 897096)									
EM1706246-005	GW69_160517	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2540	2620	2.94	0% - 20%
EM1706246-021	F3_170517	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	282	244	14.3	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 894512)									
EM1706224-008	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	98	99	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	98	99	0.00	0% - 20%
EM1706228-005	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	6	6	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	6	6	0.00	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 894517)									
EM1706255-003	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	578	581	0.528	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: 894517) - continued									
EM1706255-003	Anonymous	ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	578	581	0.528	0% - 20%
EM1706246-017	GW50_160517	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	1220	1230	0.946	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	1220	1230	0.946	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 894589)									
EM1706246-001	GW70_160517	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	47	49	4.58	0% - 20%
EM1706246-015	GW47_160517	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1010	1000	0.734	0% - 20%
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 900294)									
EM1705994-021	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	699	663	5.32	0% - 20%
EM1706144-001	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	74	84	12.1	0% - 20%
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 900295)									
EM1706246-016	GW54_160517	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	221	228	2.85	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 894590)									
EM1706246-001	GW70_160517	ED045G: Chloride	16887-00-6	1	mg/L	32	32	0.00	0% - 20%
EM1706246-015	GW47_160517	ED045G: Chloride	16887-00-6	1	mg/L	5140	5150	0.145	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 895407)									
EM1706246-002	GW46_160517	ED093F: Calcium	7440-70-2	1	mg/L	173	173	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	46	46	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	79	79	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	14	14	0.00	0% - 50%
EM1706246-015	GW47_160517	ED093F: Calcium	7440-70-2	1	mg/L	265	268	1.15	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	375	375	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	2690	2660	1.28	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	134	133	0.802	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 895405)									
EM1706226-022	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0006	0.0006	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	<0.002	<0.002	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.002	0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.008	0.008	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.858	0.837	2.47	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.018	0.017	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.011	0.011	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	11.4	11.0	4.04	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	0.07	0.08	0.00	No Limit
		EM1706226-061	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0002	<0.0002
EG020A-F: Arsenic	7440-38-2			0.001	mg/L	0.003	0.003	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: 895405) - continued									
EM1706226-061	Anonymous	EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.010	<0.010	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.02	<0.02	0.00	No Limit
		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	<0.05	<0.05	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 895408)									
EM1706307-003	Anonymous	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	0.012	0.012	0.00	0% - 50%
		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	0.246	0.250	1.35	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<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	<0.05	<0.05	0.00	No Limit
		EM1706246-016	GW54_160517	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001
EG020A-F: Arsenic	7440-38-2			0.001	mg/L	0.020	0.020	0.00	0% - 20%
EG020A-F: Chromium	7440-47-3			0.001	mg/L	0.007	0.007	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	0.679	0.677	0.374	0% - 20%
EG020A-F: Nickel	7440-02-0			0.001	mg/L	0.026	0.026	0.00	0% - 20%
EG020A-F: Zinc	7440-66-6			0.005	mg/L	0.010	0.011	0.00	No Limit
EG020A-F: Aluminium	7429-90-5			0.01	mg/L	0.40	0.40	0.00	0% - 20%
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	2.40	2.37	1.23	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 895719)									
EM1706145-001	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: Manganese	7439-96-5	0.001	mg/L	0.024	0.024	0.00	0% - 20%
		EG020A-T: Nickel	7440-02-0	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: 895719) - continued									
EM1706145-001	Anonymous	EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.022	0.021	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.02	0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EM1706227-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0222	0.0220	0.943	0% - 20%
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.070	0.070	0.00	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.137	0.136	0.00	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.103	0.101	2.07	0% - 20%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	23.6	23.5	0.316	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.170	0.168	1.30	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	59.9	60.1	0.265	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	5.49	5.48	0.294	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	151	151	0.00	0% - 20%		
EG020T: Total Metals by ICP-MS (QC Lot: 895721)									
EM1706246-010	GW49_160517	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	0.010	0.012	17.2	0% - 50%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.026	0.032	17.0	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.005	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.008	0.009	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.057	0.064	12.8	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.020	0.023	13.4	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.033	0.036	8.65	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	11.0	9.49	14.9	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	18.9	21.0	10.6	0% - 20%		
EM1706246-020	QC17_160517	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: Manganese	7439-96-5	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EG035F: Dissolved Mercury by FIMS (QC Lot: 895406)									
EM1706226-022	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0003	0.0002	45.7	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 (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 895406) - continued									
EM1706226-061	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: 895409)									
EM1706246-016	GW54_160517	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: 903145)									
EM1706204-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0010	<0.0010	0.00	No Limit
EM1706246-005	GW69_160517	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 903146)									
EM1706246-019	QC16_160517	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1706358-072	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 894511)									
EM1706222-010	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	0.00	No Limit
EM1706246-002	GW46_160517	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.7	0.7	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 894518)									
EM1706246-017	GW50_160517	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.3	1.4	0.00	0% - 50%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 900216)									
EM1706026-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.00	No Limit
EM1706243-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.10	0.10	0.00	0% - 50%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 900218)									
EM1706246-016	GW54_160517	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	3.18	3.87	19.4	0% - 20%
EM1706312-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	10.2	10.9	6.98	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 894591)									
EM1706246-001	GW70_160517	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1706246-015	GW47_160517	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 900217)									
EM1706026-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	28.2	30.3	7.29	0% - 20%
EM1706243-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	4.99	4.97	0.385	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 900219)									
EM1706246-016	GW54_160517	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.01	55.6	No Limit
EM1706312-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	33.8	33.7	0.274	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 894592)									
EM1706246-001	GW70_160517	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1706246-015	GW47_160517	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	0.01	0.00	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 900494)									
EM1706238-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.00	No Limit
EM1706246-004	GW65_160517	EP005: Total Organic Carbon	----	1	mg/L	73	67	8.95	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 896901)									
EM1706246-017	GW50_160517	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



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: 896901) - continued										
EM1706246-017	GW50_160517	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			
EP074B: Oxygenated Compounds (QC Lot: 896901)										
EM1706246-017	GW50_160517	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: 896901)										
EM1706246-017	GW50_160517	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	<1	0.00	No Limit	
EP074D: Fumigants (QC Lot: 896901)										
EM1706246-017	GW50_160517	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: 896901)										
EM1706246-017	GW50_160517	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	



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: 896901) - continued									
EM1706246-017	GW50_160517	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: 896901)									
EM1706246-017	GW50_160517	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: 896901)							
EM1706246-017	GW50_160517	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: 896901)									
EM1706246-017	GW50_160517	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 894498)									
EM1706246-007	QC113_160517	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	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 (%)	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 896900)										
EM1706246-012	GW56_160517	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EM1706246-017	GW50_160517	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 896905)										
EM1706245-038	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EM1706266-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 894498)										
EM1706246-007	QC113_160517	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit	
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 896900)										
EM1706246-012	GW56_160517	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EM1706246-017	GW50_160517	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: 896905)										
EM1706245-038	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EM1706266-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EP080: BTEXN (QC Lot: 896900)										
EM1706246-012	GW56_160517	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	
EM1706246-017	GW50_160517	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
		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: 896905)										
EM1706245-038	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	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	
EM1706266-005	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
		EP080: Benzene	71-43-2	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 (%)		
EP080: BTEXN (QC Lot: 896905) - continued											
EM1706266-005	Anonymous	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		
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 900101)											
EM1706246-003	GW61_160517	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit		
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.02	0.00	No Limit		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.02	<0.02	0.00	No Limit		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
ES1711914-006	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit		
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 900101)											
EM1706246-003	GW61_160517	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.05	0.05	0.00	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit		
		ES1711914-006	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
				EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.00	No Limit
				EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	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 (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 900101) - continued									
ES1711914-006	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 900101)									
EM1706246-003	GW61_160517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1711914-006	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 900101)									
EM1706246-003	GW61_160517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1711914-006	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit

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 Work Order : EM1706246
 Client : AECOM Australia Pty Ltd
 Project : 60537182



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 (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 900101) - continued									
ES1711914-006	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 900101)									
EM1706246-003	GW61_160517	EP231X: Sum of PFAS	----	0.01	µg/L	0.10	0.09	10.5	0% - 50%
ES1711914-006	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.04	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: 897094)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	102	96	106	
				<10	293 mg/L	98.4	96	106	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 897096)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	98.6	96	106	
				<10	293 mg/L	102	96	106	
ED037P: Alkalinity by PC Titrator (QCLot: 894512)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	91.4	90	110	
ED037P: Alkalinity by PC Titrator (QCLot: 894517)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	99.1	90	110	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 894589)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	110	92	115	
				<1	100 mg/L	106	92	115	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<1	500 mg/L	98.0	85	118	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900295)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<1	500 mg/L	92.8	85	118	
ED045G: Chloride by Discrete Analyser (QCLot: 894590)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	109	89	117	
				<1	1000 mg/L	106	92	112	
ED093F: Dissolved Major Cations (QCLot: 895407)									
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	100	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	99.4	89	107	
EG020F: Dissolved Metals by ICP-MS (QCLot: 895405)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	98.9	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	92.1	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	98.6	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.3	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	89.7	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	89.4	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	89.0	87	109	



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
EG020F: Dissolved Metals by ICP-MS (QCLot: 895405) - continued									
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.7	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	91.4	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.2	94	106	
EG020F: Dissolved Metals by ICP-MS (QCLot: 895408)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	99.5	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	89.1	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	89.6	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.4	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.9	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	89.6	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	89.9	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	95.1	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.6	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.2	94	106	
EG020T: Total Metals by ICP-MS (QCLot: 895719)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	105	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	105	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.4	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.1	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.4	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.4	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.4	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.9	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.8	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100.0	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	99	110	
EG020T: Total Metals by ICP-MS (QCLot: 895721)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	104	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.7	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.9	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.5	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.4	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.8	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.9	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	95.3	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	102	88	112	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 895721) - continued								
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	105	99	110
EG035F: Dissolved Mercury by FIMS (QCLot: 895406)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.7	88	117
EG035F: Dissolved Mercury by FIMS (QCLot: 895409)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	107	88	117
EG035T: Total Recoverable Mercury by FIMS (QCLot: 903145)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	92.8	87	113
EG035T: Total Recoverable Mercury by FIMS (QCLot: 903146)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.5	87	113
EK040P: Fluoride by PC Titrator (QCLot: 894511)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	92.6	85	112
EK040P: Fluoride by PC Titrator (QCLot: 894518)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	109	85	112
EK055G: Ammonia as N by Discrete Analyser (QCLot: 900216)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	95.3	80	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 900218)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	97.3	80	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 894591)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	94	107
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 900217)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	107	89	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 900219)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	89	114
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 894592)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	108	94	108
EP005: Total Organic Carbon (TOC) (QCLot: 900494)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	93.5	81	109
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 896901)								
EP074-WF: Benzene	71-43-2	1	µg/L	<1	20 µg/L	98.6	81	119
EP074-WF: Toluene	108-88-3	1	µg/L	<1	20 µg/L	93.7	84	117
EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	20 µg/L	100	83	114
EP074-WF: meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	40 µg/L	96.1	81	116
EP074-WF: Styrene	100-42-5	1	µg/L	<1	20 µg/L	93.2	82	118
EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	20 µg/L	96.2	85	115
EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	20 µg/L	96.4	81	113



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	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 896901) - continued									
EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	20 µg/L	92.1	76	111	
EP074-WF: 1,3,5-Trimethylbenzene	108-67-8	1	µg/L	<1	20 µg/L	96.7	79	109	
EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	20 µg/L	97.9	77	111	
EP074-WF: 1,2,4-Trimethylbenzene	95-63-6	1	µg/L	<1	20 µg/L	103	79	108	
EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	20 µg/L	101	80	110	
EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	20 µg/L	95.1	75	111	
EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	20 µg/L	88.4	68	111	
EP074B: Oxygenated Compounds (QCLot: 896901)									
EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	200 µg/L	87.9	69	147	
EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	200 µg/L	85.7	77	124	
EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	200 µg/L	84.5	71	131	
EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	200 µg/L	89.0	73	128	
EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	200 µg/L	85.9	75	129	
EP074C: Sulfonated Compounds (QCLot: 896901)									
EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	20 µg/L	66.9	64	119	
EP074D: Fumigants (QCLot: 896901)									
EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	20 µg/L	92.0	74	117	
EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	20 µg/L	95.1	83	118	
EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	20 µg/L	88.8	74	109	
EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	20 µg/L	83.6	70	109	
EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	20 µg/L	83.5	81	116	
EP074E: Halogenated Aliphatic Compounds (QCLot: 896901)									
EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	200 µg/L	68.3	61	137	
EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	200 µg/L	70.7	66	137	
EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	200 µg/L	75.7	67	135	
EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	200 µg/L	75.0	52	128	
EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	200 µg/L	87.3	76	125	
EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	200 µg/L	88.9	74	123	
EP074-WF: 1,1-Dichloroethene	75-35-4	1	µg/L	<1	20 µg/L	89.3	75	120	
EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	20 µg/L	84.2	37	120	
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	20 µg/L	119	72	159	
EP074-WF: trans-1,2-Dichloroethene	156-60-5	1	µg/L	<1	20 µg/L	88.6	78	117	
EP074-WF: 1,1-Dichloroethane	75-34-3	1	µg/L	<1	20 µg/L	96.0	81	118	
EP074-WF: cis-1,2-Dichloroethene	156-59-2	1	µg/L	<1	20 µg/L	99.7	83	118	
EP074-WF: 1,1,1-Trichloroethane	71-55-6	1	µg/L	<1	20 µg/L	95.5	76	115	
EP074-WF: 1,1-Dichloropropylene	563-58-6	1	µg/L	<1	20 µg/L	85.9	75	117	
EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	20 µg/L	89.8	72	111	
EP074-WF: 1,2-Dichloroethane	107-06-2	1	µg/L	<1	20 µg/L	91.0	81	120	



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: 896901) - continued								
EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	20 µg/L	96.1	78	116
EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	20 µg/L	89.8	79	116
EP074-WF: 1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	20 µg/L	95.1	85	119
EP074-WF: 1.3-Dichloropropane	142-28-9	1	µg/L	<1	20 µg/L	93.3	85	119
EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	20 µg/L	87.0	76	120
EP074-WF: 1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	20 µg/L	92.6	78	110
EP074-WF: trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	20 µg/L	70.1	64	118
EP074-WF: cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	20 µg/L	64.5	51	113
EP074-WF: 1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	20 µg/L	90.8	85	121
EP074-WF: 1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	20 µg/L	86.6	84	118
EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	20 µg/L	99.4	64	109
EP074-WF: 1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	20 µg/L	81.1	65	115
EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	20 µg/L	104	70	121
EP074F: Halogenated Aromatic Compounds (QCLot: 896901)								
EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	20 µg/L	96.0	85	115
EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	20 µg/L	93.6	82	116
EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	20 µg/L	101	81	112
EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	20 µg/L	97.3	80	110
EP074-WF: 1.3-Dichlorobenzene	541-73-1	1	µg/L	<1	20 µg/L	99.3	80	110
EP074-WF: 1.4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	20 µg/L	101	80	112
EP074-WF: 1.2-Dichlorobenzene	95-50-1	1	µg/L	<1	20 µg/L	94.4	84	111
EP074-WF: 1.2.4-Trichlorobenzene	120-82-1	1	µg/L	<1	20 µg/L	100	70	114
EP074-WF: 1.2.3-Trichlorobenzene	87-61-6	1	µg/L	<1	20 µg/L	99.3	78	116
EP074G: Trihalomethanes (QCLot: 896901)								
EP074-WF: Chloroform	67-66-3	1	µg/L	<1	20 µg/L	99.8	82	118
EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	20 µg/L	93.3	75	112
EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	20 µg/L	85.6	73	108
EP074-WF: Bromoform	75-25-2	1	µg/L	<1	20 µg/L	78.6	68	107
EP074H: Naphthalene (QCLot: 896901)								
EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	106	80	116
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 894497)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	87.6	39	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	92.7	40	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	95.7	47	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	89.0	51	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	95.0	53	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	101	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	95.0	59	123



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: 894497) - continued									
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	96.1	58	123	
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	90.3	52	126	
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	90.3	55	123	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	90.7	52	131	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	84.9	57	126	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	88.2	56	126	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	88.3	53	123	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	87.9	53	125	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	88.1	53	125	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894498)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	108	53	123	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	117	57	133	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	102	55	141	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 896900)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	95.9	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 896905)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	90.4	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894498)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	112	54	122	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	106	56	132	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	111	51	137	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 896900)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	92.5	65	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 896905)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	89.5	65	125	
EP080: BTEXN (QCLot: 896900)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	103	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	101	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	102	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	100	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	100.0	78	128	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	125	71	129	
EP080: BTEXN (QCLot: 896905)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	97.4	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.0	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	94.3	72	124	



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
EP080: BTEXN (QCLot: 896905) - continued								
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	95.3	72	130
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	101	78	128
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	109	71	129
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 900101)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	91.6	70	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	107	70	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	107	70	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	110	70	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	87.0	70	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	106	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 900101)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	107	70	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	82.6	70	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	104	70	130
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	112	70	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	118	70	130
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	86.2	70	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	92.4	70	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	103	70	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	93.8	70	130
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	101	70	130
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	106	70	124
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 900101)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	80.0	70	130
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	109	70	130
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	122	70	129
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	1.25 µg/L	96.1	70	129
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	101	70	126
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	80.4	70	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	90.6	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 900101)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	105	70	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	276119-97-2	0.05	µg/L	<0.05	0.5 µg/L	78.0	70	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	97.4	70	130



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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 900101) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	87.4	70	130

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	Spike Concentration	Matrix Spike (MS) Report		
					Spike Recovery(%) MS	Recovery Limits (%)	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 894589)							
EM1706246-002	GW46_160517	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)							
EM1705994-023	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	120	70	130
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900295)							
EM1706246-017	GW50_160517	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	88.6	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 894590)							
EM1706246-002	GW46_160517	ED045G: Chloride	16887-00-6	400 mg/L	98.4	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 895405)							
EM1706226-022	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	95.3	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	101	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	81.1	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	86.6	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	84.6	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	# Not Determined	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	89.6	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	83.5	75	131
EG020F: Dissolved Metals by ICP-MS (QCLot: 895408)							
EM1706246-016	GW54_160517	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	99.6	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	99.2	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	94.6	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	94.2	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	94.0	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	91.3	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	94.3	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	94.3	75	131



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: 895719)							
EM1706145-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	96.1	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	92.9	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	90.4	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	90.9	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	102	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	91.9	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	93.5	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	96.1	74	116
EG020T: Total Metals by ICP-MS (QCLot: 895721)							
EM1706246-010	GW49_160517	EG020A-T: Arsenic	7440-38-2	1 mg/L	97.4	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	93.3	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	91.0	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	95.4	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	104	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	93.0	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	97.1	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	99.7	74	116
EG035F: Dissolved Mercury by FIMS (QCLot: 895406)							
EM1706226-023	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	82.2	70	120
EG035F: Dissolved Mercury by FIMS (QCLot: 895409)							
EM1706246-017	GW50_160517	EG035F: Mercury	7439-97-6	0.01 mg/L	72.6	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 903145)							
EM1706204-002	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	88.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 903146)							
EM1706246-020	QC17_160517	EG035T: Mercury	7439-97-6	0.01 mg/L	96.1	70	130
EK040P: Fluoride by PC Titrator (QCLot: 894511)							
EM1706222-005	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	93.0	70	130
EK040P: Fluoride by PC Titrator (QCLot: 894518)							
EM1706246-018	GW45_160517	EK040P: Fluoride	16984-48-8	5 mg/L	106	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 900216)							
EM1706026-002	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	87.4	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 900218)							
EM1706246-017	GW50_160517	EK055G: Ammonia as N	7664-41-7	1 mg/L	# Not Determined	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 894591)							
EM1706246-002	GW46_160517	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	93.6	80	114



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
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 900217)							
EM1706026-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	123	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 900219)							
EM1706246-017	GW50_160517	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 894592)							
EM1706246-002	GW46_160517	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	96.2	79	123
EP005: Total Organic Carbon (TOC) (QCLot: 900494)							
EM1706238-002	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	91.5	80	114
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 896901)							
EM1706246-009	GW39_160517	EP074-WF: Benzene	71-43-2	20 µg/L	127	76	128
		EP074-WF: Toluene	108-88-3	20 µg/L	106	72	132
EP074E: Halogenated Aliphatic Compounds (QCLot: 896901)							
EM1706246-009	GW39_160517	EP074-WF: 1,1-Dichloroethene	75-35-4	20 µg/L	# 119	63	129
		EP074-WF: Trichloroethene	79-01-6	20 µg/L	107	64	126
EP074F: Halogenated Aromatic Compounds (QCLot: 896901)							
EM1706246-009	GW39_160517	EP074-WF: Chlorobenzene	108-90-7	20 µg/L	107	81	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 896900)							
EM1706246-009	GW39_160517	EP080: C6 - C9 Fraction	----	280 µg/L	113	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 896905)							
EM1706266-003	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	59.5	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 896900)							
EM1706246-009	GW39_160517	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	110	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 896905)							
EM1706266-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	59.8	44	122
EP080: BTEXN (QCLot: 896900)							
EM1706246-009	GW39_160517	EP080: Benzene	71-43-2	20 µg/L	120	68	130
		EP080: Toluene	108-88-3	20 µg/L	119	72	132
EP080: BTEXN (QCLot: 896905)							
EM1706266-003	Anonymous	EP080: Benzene	71-43-2	20 µg/L	78.2	68	130
		EP080: Toluene	108-88-3	20 µg/L	76.4	72	132
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 900101)							
EM1706246-003	GW61_160517	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	103	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	122	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	81.6	50	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 900101) - continued							
EM1706246-003	GW61_160517	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	124	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	122	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	118	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 900101)							
EM1706246-003	GW61_160517	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	110	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	127	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	95.0	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	91.6	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	126	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	111	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	107	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	106	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	68.4	50	130
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.5 µg/L	110	50	130
		EP231X: Perfluorotetradecanoic acid (PFTTeDA)	376-06-7	1.25 µg/L	76.6	50	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 900101)							
EM1706246-003	GW61_160517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	93.4	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	117	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	96.1	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	1.25 µg/L	103	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	76.5	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	103	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	117	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 900101)							
EM1706246-003	GW61_160517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	109	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	80.2	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	55.2	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	119	50	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1706246	Page	: 1 of 17
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 17-May-2017
Site	: Fishermans Bend	Issue Date	: 24-May-2017
Sampler	: NK/MW/JM	No. of samples received	: 23
Order number	: 60537182 3.5	No. of samples analysed	: 23

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	EM1706246--002	GW46_160517	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG020F: Dissolved Metals by ICP-MS	EM1706226--022	Anonymous	Manganese	7439-96-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK055G: Ammonia as N by Discrete Analyser	EM1706246--017	GW50_160517	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EM1706246--017	GW50_160517	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP074E: Halogenated Aliphatic Compounds	EM1706246--009	GW39_160517	1.1-Dichloroethene	75-35-4	119 %	63-129%	Recovery greater than upper control limit

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	----	----	----	18-May-2017	16-May-2017	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	14	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatle Fraction	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	14	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatle Fraction	0	20	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) GW70_160517, GW46_160517, GW61_160517, GW65_160517, GW69_160517, GW39_160517, GW49_160517, GW44_160517, GW56_160517, GW47_160517, GW54_160517, GW50_160517, GW45_160517, F3_170517	16-May-2017	---	---	---	18-May-2017	16-May-2017	✖
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) GW70_160517, GW46_160517, GW61_160517, GW65_160517, GW69_160517, GW39_160517, GW49_160517, GW44_160517, GW56_160517, GW47_160517, GW54_160517, GW50_160517, GW45_160517, F3_170517	16-May-2017	---	---	---	19-May-2017	23-May-2017	✔
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) GW70_160517, GW46_160517, GW61_160517, GW65_160517, GW69_160517, GW39_160517, GW49_160517, GW44_160517, GW56_160517, GW47_160517, GW54_160517, GW50_160517, GW45_160517, F3_170517	16-May-2017	---	---	---	18-May-2017	30-May-2017	✔



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) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517, GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	19-May-2017	13-Jun-2017	✓
ED043: Total Oxidised Sulfur as SO4 2-							
Clear Plastic Bottle - Natural (ED043) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517, GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	22-May-2017	13-Jun-2017	✓	22-May-2017	13-Jun-2017	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517, GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	19-May-2017	13-Jun-2017	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517, GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	23-May-2017	13-Jun-2017	✓



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) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517, GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	18-May-2017	12-Nov-2017	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW47_160517, GW50_160517, QC16_160517, F3_170517, GW46_160517, GW65_160517, GW39_160517, GW44_160517, QC115_160517, GW54_160517, GW45_160517, QC17_160517, QC117_170517	16-May-2017	19-May-2017	12-Nov-2017	✓	19-May-2017	12-Nov-2017	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) QC113_160517, QC118_170517	16-May-2017	19-May-2017	12-Nov-2017	✓	19-May-2017	12-Nov-2017	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517, GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	19-May-2017	13-Jun-2017	✓



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	
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW47_160517, GW50_160517, QC16_160517, F3_170517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, QC115_160517, GW54_160517, GW45_160517, QC17_160517, QC117_170517	16-May-2017	----	----	----	24-May-2017	13-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) QC113_160517,	QC118_170517	16-May-2017	----	----	----	24-May-2017	13-Jun-2017	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	18-May-2017	13-Jun-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	23-May-2017	13-Jun-2017	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	18-May-2017	18-May-2017	✓



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	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	22-May-2017	13-Jun-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	18-May-2017	18-May-2017	✓
EP005: Total Organic Carbon (TOC)								
Amber TOC Vial - Sulfuric Acid (EP005) GW39_160517, GW44_160517	GW49_160517,	16-May-2017	----	----	----	22-May-2017	13-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP005) GW70_160517, GW61_160517, GW69_160517, GW47_160517, GW50_160517, F3_170517	GW46_160517, GW65_160517, GW56_160517, GW54_160517, GW45_160517,	16-May-2017	----	----	----	22-May-2017	13-Jun-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517,	GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517	GW56_160517, GW54_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074B: Oxygenated Compounds								
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517,	GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517	GW56_160517, GW54_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓



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
EP074C: Sulfonated Compounds							
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517 GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074D: Fumigants							
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517 GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074E: Halogenated Aliphatic Compounds							
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517 GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074F: Halogenated Aromatic Compounds							
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517 GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074G: Trihalomethanes							
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517 GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074H: Naphthalene							
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517 GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓



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))								
GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	19-May-2017	23-May-2017	✓	22-May-2017	28-Jun-2017	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
GW70_160517, GW61_160517, GW69_160517, GW39_160517, GW44_160517, QC115_160517, GW54_160517, GW45_160517, QC17_160517, QC117_170517,	GW46_160517, GW65_160517, QC113_160517, GW49_160517, GW56_160517, GW47_160517, GW50_160517, QC16_160517, F3_170517, QC118_170517	16-May-2017	19-May-2017	23-May-2017	✓	22-May-2017	28-Jun-2017	✓
Amber TOC Vial - Sulfuric Acid (EP080)								
GW39_160517, GW44_160517	GW49_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC16_160517, F3_170517, QC118_170517	QC17_160517, QC117_170517,	16-May-2017	19-May-2017	30-May-2017	✓	19-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
GW70_160517, GW61_160517, GW69_160517, QC113_160517, GW56_160517, QC116_160517, GW54_160517, GW45_160517	GW46_160517, GW65_160517, QC112_160517, QC114_160517, QC115_160517, GW47_160517, GW50_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓



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 Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
GW70_160517, GW61_160517, GW69_160517, GW39_160517, GW44_160517, QC115_160517, GW54_160517, GW45_160517, QC17_160517, QC117_170517,	GW46_160517, GW65_160517, QC113_160517, GW49_160517, GW56_160517, GW47_160517, GW50_160517, QC16_160517, F3_170517, QC118_170517	16-May-2017	19-May-2017	23-May-2017	✓	22-May-2017	28-Jun-2017	✓
Amber TOC Vial - Sulfuric Acid (EP080)								
GW39_160517, GW44_160517	GW49_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC16_160517, F3_170517, QC118_170517	QC17_160517, QC117_170517,	16-May-2017	19-May-2017	30-May-2017	✓	19-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
GW70_160517, GW61_160517, GW69_160517, QC113_160517, GW56_160517, QC116_160517, GW54_160517, GW45_160517	GW46_160517, GW65_160517, QC112_160517, QC114_160517, QC115_160517, GW47_160517, GW50_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓



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: BTEXN								
Amber TOC Vial - Sulfuric Acid (EP080) GW39_160517, GW44_160517	GW49_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC16_160517, F3_170517, QC118_170517	QC17_160517, QC117_170517,	16-May-2017	19-May-2017	30-May-2017	✓	19-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW70_160517, GW61_160517, GW69_160517, QC113_160517, GW56_160517, QC116_160517, GW54_160517, GW45_160517	GW46_160517, GW65_160517, QC112_160517, QC114_160517, QC115_160517, GW47_160517, GW50_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓



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	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	3	24	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	3	24	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	14	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	39	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	3	26	11.54	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	24	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	24	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	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							
Total Dissolved Solids (High Level)	EA015H	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	14	0.00	5.00	*	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	14	7.14	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							
Matrix Spikes (MS) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	26	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	9	11.11	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)
Ammonium as N	EK055G-NH ₄	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH ₃ G. 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)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. 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 SO ₄ DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. 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)



<i>Analytical Methods</i>			
	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.
<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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1706246

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 4
Order number	: 60537182	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermans Bend		
Sampler	: NK/MW/JM		

Dates

Date Samples Received	: 17-May-2017 13:45	Issue Date	: 17-May-2017
Client Requested Due Date	: 24-May-2017	Scheduled Reporting Date	: 25-May-2017

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 5.5°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 23 / 23

General Comments

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



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020F Dissolved Metals by ICPMS	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EK055G-NH4 Ammonium as N	WATER - NT-01 & 02A Ca, Mg, Na, K, Cl, SO4, Alkalinity & Fluoride	WATER - NT-04 Nitrite and Nitrate	WATER - W-02T 8 metals (Total)	WATER - W-26 TRH/BTEX/N/PAH/8 Metals
EM1706246-001	16-May-2017 00:00	GW70_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-002	16-May-2017 00:00	GW46_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-003	16-May-2017 00:00	GW61_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-004	16-May-2017 00:00	GW65_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-005	16-May-2017 00:00	GW69_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-009	16-May-2017 00:00	GW39_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-010	16-May-2017 00:00	GW49_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-011	16-May-2017 00:00	GW44_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-012	16-May-2017 00:00	GW54_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-015	16-May-2017 00:00	GW47_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-016	16-May-2017 00:00	GW54_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-017	16-May-2017 00:00	GW50_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-018	16-May-2017 00:00	GW45_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-021	16-May-2017 00:00	F3_170517	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PC)	WATER - EA015H Total Dissolved Solids - High Level	WATER - ED043 Total Oxidised Sulfur as SO4 2-	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - EK071G Reactive Phosphorus by Discrete analyser	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP231X PFAS - Full Suite (28 analytes)
EM1706246-001	16-May-2017 00:00	GW70_160517	✓	✓	✓	✓	✓	✓	
EM1706246-002	16-May-2017 00:00	GW46_160517	✓	✓	✓	✓	✓	✓	
EM1706246-003	16-May-2017 00:00	GW61_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-004	16-May-2017 00:00	GW65_160517	✓	✓	✓	✓	✓	✓	
EM1706246-005	16-May-2017 00:00	GW69_160517	✓	✓	✓	✓	✓	✓	
EM1706246-007	16-May-2017 00:00	QC113_160517				✓			
EM1706246-009	16-May-2017 00:00	GW39_160517	✓	✓	✓	✓	✓	✓	
EM1706246-010	16-May-2017 00:00	GW49_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-011	16-May-2017 00:00	GW44_160517	✓	✓	✓	✓	✓	✓	
EM1706246-012	16-May-2017 00:00	GW54_160517	✓	✓	✓	✓	✓	✓	



			WATER - EA005P pH (PC)	WATER - EA015H Total Dissolved Solids - High Level	WATER - ED043 Total Oxidised Sulfur as SO4 2-	WATER - EG020T Total Recoverable Metals by ICPMS (including WATER - EK071G Reactive Phosphorus by Discrete analyser	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP231X PFAS - Full Suite (28 analytes)
EM1706246-013	16-May-2017 00:00	QC115_160517				✓		
EM1706246-015	16-May-2017 00:00	GW47_160517	✓	✓	✓	✓	✓	
EM1706246-016	16-May-2017 00:00	GW54_160517	✓	✓	✓	✓	✓	
EM1706246-017	16-May-2017 00:00	GW50_160517	✓	✓	✓	✓	✓	
EM1706246-018	16-May-2017 00:00	GW45_160517	✓	✓	✓	✓	✓	
EM1706246-019	16-May-2017 00:00	QC16_160517				✓		
EM1706246-020	16-May-2017 00:00	QC17_160517				✓		
EM1706246-021	16-May-2017 00:00	F3_170517	✓	✓	✓	✓	✓	
EM1706246-022	16-May-2017 00:00	QC117_170517				✓		
EM1706246-023	16-May-2017 00:00	QC118_170517				✓		

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP074-WF Full VOCs with WF DL incl DCM & Acetone	WATER - W-05T TRH/BTEXN/8 Metals (Total)	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1706246-003	16-May-2017 00:00	GW61_160517	✓		
EM1706246-006	16-May-2017 00:00	QC112_160517			✓
EM1706246-007	16-May-2017 00:00	QC113_160517		✓	
EM1706246-008	16-May-2017 00:00	QC114_160517			✓
EM1706246-009	16-May-2017 00:00	GW39_160517	✓		
EM1706246-011	16-May-2017 00:00	GW44_160517	✓		
EM1706246-012	16-May-2017 00:00	GW54_160517	✓		
EM1706246-013	16-May-2017 00:00	QC115_160517		✓	
EM1706246-014	16-May-2017 00:00	QC116_160517			✓
EM1706246-015	16-May-2017 00:00	GW47_160517	✓		
EM1706246-016	16-May-2017 00:00	GW54_160517	✓		
EM1706246-017	16-May-2017 00:00	GW50_160517	✓		
EM1706246-019	16-May-2017 00:00	QC16_160517		✓	
EM1706246-020	16-May-2017 00:00	QC17_160517		✓	
EM1706246-022	16-May-2017 00:00	QC117_170517		✓	
EM1706246-023	16-May-2017 00:00	QC118_170517		✓	

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1706246

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 4
Order number	: 60537182	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermans Bend		
Sampler	: NK/MW/JM		

Dates

Date Samples Received	: 17-May-2017 13:45	Issue Date	: 18-May-2017
Client Requested Due Date	: 24-May-2017	Scheduled Reporting Date	: 25-May-2017

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 5.5°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 23 / 23

General Comments

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



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020F Dissolved Metals by ICPMS	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EK055G-NH4 Ammonium as N	WATER - NT-01 & 02A Ca, Mg, Na, K, Cl, SO4, Alkalinity & Fluoride	WATER - NT-04 Nitrite and Nitrate	WATER - W-02T 8 metals (Total)	WATER - W-26 TRH/BTEX/N/PAH/8 Metals
EM1706246-001	16-May-2017 00:00	GW70_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-002	16-May-2017 00:00	GW46_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-003	16-May-2017 00:00	GW61_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-004	16-May-2017 00:00	GW65_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-005	16-May-2017 00:00	GW69_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-009	16-May-2017 00:00	GW39_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-010	16-May-2017 00:00	GW49_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-011	16-May-2017 00:00	GW44_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-012	16-May-2017 00:00	GW56_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-015	16-May-2017 00:00	GW47_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-016	16-May-2017 00:00	GW54_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-017	16-May-2017 00:00	GW50_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-018	16-May-2017 00:00	GW45_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-021	16-May-2017 00:00	F3_170517	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PC)	WATER - EA015H Total Dissolved Solids - High Level	WATER - ED043 Total Oxidised Sulfur as SO4 2-	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - EK071G Reactive Phosphorus by Discrete analyser	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP231X PFAS - Full Suite (28 analytes)
EM1706246-001	16-May-2017 00:00	GW70_160517	✓	✓	✓	✓	✓	✓	
EM1706246-002	16-May-2017 00:00	GW46_160517	✓	✓	✓	✓	✓	✓	
EM1706246-003	16-May-2017 00:00	GW61_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-004	16-May-2017 00:00	GW65_160517	✓	✓	✓	✓	✓	✓	
EM1706246-005	16-May-2017 00:00	GW69_160517	✓	✓	✓	✓	✓	✓	
EM1706246-007	16-May-2017 00:00	QC113_160517				✓			
EM1706246-009	16-May-2017 00:00	GW39_160517	✓	✓	✓	✓	✓	✓	
EM1706246-010	16-May-2017 00:00	GW49_160517	✓	✓	✓	✓	✓	✓	✓
EM1706246-011	16-May-2017 00:00	GW44_160517	✓	✓	✓	✓	✓	✓	
EM1706246-012	16-May-2017 00:00	GW56_160517	✓	✓	✓	✓	✓	✓	



			WATER - EA005P pH (PC)	WATER - EA015H Total Dissolved Solids - High Level	WATER - ED043 Total Oxidised Sulfur as SO4 2-	WATER - EG020T Total Recoverable Metals by ICPMS (including WATER - EK071G Reactive Phosphorus by Discrete analyser	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP231X PFAS - Full Suite (28 analytes)
EM1706246-013	16-May-2017 00:00	QC115_160517				✓		
EM1706246-015	16-May-2017 00:00	GW47_160517	✓	✓	✓	✓	✓	
EM1706246-016	16-May-2017 00:00	GW54_160517	✓	✓	✓	✓	✓	
EM1706246-017	16-May-2017 00:00	GW50_160517	✓	✓	✓	✓	✓	
EM1706246-018	16-May-2017 00:00	GW45_160517	✓	✓	✓	✓	✓	
EM1706246-019	16-May-2017 00:00	QC16_160517				✓		
EM1706246-020	16-May-2017 00:00	QC17_160517				✓		
EM1706246-021	16-May-2017 00:00	F3_170517	✓	✓	✓	✓	✓	
EM1706246-022	16-May-2017 00:00	QC117_170517				✓		
EM1706246-023	16-May-2017 00:00	QC118_170517				✓		

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP074-WF Full VOCs with WF DL incl DCM & Acetone	WATER - W-05T TRH/BTEXN/8 Metals (Total)	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1706246-003	16-May-2017 00:00	GW61_160517	✓		
EM1706246-006	16-May-2017 00:00	QC112_160517			✓
EM1706246-007	16-May-2017 00:00	QC113_160517		✓	
EM1706246-008	16-May-2017 00:00	QC114_160517			✓
EM1706246-009	16-May-2017 00:00	GW39_160517	✓		
EM1706246-011	16-May-2017 00:00	GW44_160517	✓		
EM1706246-012	16-May-2017 00:00	GW56_160517	✓		
EM1706246-013	16-May-2017 00:00	QC115_160517		✓	
EM1706246-014	16-May-2017 00:00	QC116_160517			✓
EM1706246-015	16-May-2017 00:00	GW47_160517	✓		
EM1706246-016	16-May-2017 00:00	GW54_160517	✓		
EM1706246-017	16-May-2017 00:00	GW50_160517	✓		
EM1706246-019	16-May-2017 00:00	QC16_160517		✓	
EM1706246-020	16-May-2017 00:00	QC17_160517		✓	
EM1706246-022	16-May-2017 00:00	QC117_170517		✓	
EM1706246-023	16-May-2017 00:00	QC118_170517		✓	

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

CERTIFICATE OF ANALYSIS

Work Order : EM1706246 Amendment : 1 Client : AECOM Australia Pty Ltd Contact : MS AVERYLL COYNE Address : COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004 Telephone : +61 03 9653 1234 Project : 60537182 Order number : 60537182 3.5 C-O-C number : ---- Sampler : NK/MW/JM Site : Fishermans Bend Quote number : ME/199/16 No. of samples received : 23 No. of samples analysed : 23	Page : 1 of 35 Laboratory : Environmental Division Melbourne Contact : Carol Walsh Address : 4 Westall Rd Springvale VIC Australia 3171 Telephone : +61-3-8549 9608 Date Samples Received : 17-May-2017 13:45 Date Analysis Commenced : 18-May-2017 Issue Date : 25-May-2017 17:52
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Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- TDS by method EA-015 for EM1706246 #1,10,16 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- **EP074-WF: Particular samples has LOR raised for Idomethane due to matrix interference.**
- ALS is not NATA accredited for the analysis of ammonium as N.
- Amendment (25/02/2017): This report has been amended following changes to the analytical data reported. The quality system is being utilised to resolve this issue. The specific data affected includes EP231X results for sample "GW49_160517".
- 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 iron for #10.
- Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate; and major cations - calcium, magnesium, potassium, sodium, iron and ammonia for #21.
- **EP074-WF: Sample EM1706246-012 has LOR raised for Acetone due to laboratory background.**
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- 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	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.11	7.14	7.44	6.76	7.83	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	416	980	2760	2200	2540	
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	168	296	1660	1330	1160	
Total Alkalinity as CaCO3	----	1	mg/L	168	296	1660	1330	1160	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	47	447	187	<1	<1	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	105	814	233	41	25	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	32	45	839	696	937	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	43	173	95	96	95	
Magnesium	7439-95-4	1	mg/L	9	46	150	123	94	
Sodium	7440-23-5	1	mg/L	41	79	777	517	813	
Potassium	7440-09-7	1	mg/L	4	14	106	79	57	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.07	0.06	0.03	0.04	0.05	
Arsenic	7440-38-2	0.001	mg/L	0.010	0.002	0.004	0.011	0.007	
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	0.004	0.003	0.005	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.022	0.285	0.211	0.216	0.552	
Nickel	7440-02-0	0.001	mg/L	0.004	0.003	0.006	0.012	0.018	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.015	0.025	0.008	0.012	0.008	
Iron	7439-89-6	0.05	mg/L	1.51	3.98	14.8	18.3	4.92	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	14.7	19.9	0.74	11.0	6.80	
Arsenic	7440-38-2	0.001	mg/L	0.030	0.043	0.007	0.068	0.014	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0007	0.0008	0.0103	0.0010	
Chromium	7440-47-3	0.001	mg/L	0.040	0.065	0.010	0.055	0.029	
Copper	7440-50-8	0.001	mg/L	0.007	0.061	0.038	0.184	0.076	
Nickel	7440-02-0	0.001	mg/L	0.023	0.058	0.016	0.077	0.053	
Lead	7439-92-1	0.001	mg/L	0.020	0.027	0.060	0.595	0.210	
Zinc	7440-66-6	0.005	mg/L	0.082	0.208	0.621	1.74	0.839	
Manganese	7439-96-5	0.001	mg/L	0.073	0.402	0.242	0.452	0.688	
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	19.3	40.7	20.3	61.8	21.2	
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.7	0.7	0.2	0.1	0.7	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.34	2.21	80.3	73.6	10.3	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.34	2.20	79.8	73.5	10.1	
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	0.02	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.02	<0.01	<0.01	<0.01	0.02	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	<0.01	<0.01	<0.01	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	<0.01	<0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	5.24	16.5	60.7	46.2	49.6	
Total Cations	----	0.01	meq/L	4.77	16.2	53.6	39.4	49.3	
Ionic Balance	----	0.01	%	4.65	0.85	6.24	7.92	0.31	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	8	9	39	73	51	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
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	----	----	3	----	----	
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	----	----	4	----	----	
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	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	----	----	<2	----	----	
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	----	----	
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	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
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	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	1.4	4.1	<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	4.1	<1.0	
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	<1.0	1.5	<1.0	
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	<1.0	2.0	<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	1.4	11.7	<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	30	<20	30	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	160	460	<50	
C15 - C28 Fraction	----	100	µg/L	<100	280	700	610	540	
C29 - C36 Fraction	----	50	µg/L	<50	<50	70	110	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	280	930	1180	540	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	20	<20	40	<20	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	290	600	110	
>C16 - C34 Fraction	----	100	µg/L	<100	250	590	520	480	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	250	880	1120	590	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	290	600	110	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	11	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	4	<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	16	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	0.03	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	<0.02	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	----	0.02	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	<0.02	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	<0.01	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	<0.02	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	<0.1	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	<0.02	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	0.05	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	<0.02	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	<0.01	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	<0.02	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	<0.02	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	<0.02	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	<0.02	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	<0.02	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	<0.05	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	<0.02	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	----	----	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	<0.02	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	<0.02	----	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	<0.05	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	<0.05	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	<0.05	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	<0.05	----	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	----	0.10	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	0.02	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	0.10	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	----	----	107	----	----	
Toluene-D8	2037-26-5	1	%	----	----	116	----	----	
4-Bromofluorobenzene	460-00-4	1	%	----	----	116	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	33.4	30.4	32.1	37.7	35.2	
2-Chlorophenol-D4	93951-73-6	1	%	83.1	81.2	78.2	89.4	86.3	
2,4,6-Tribromophenol	118-79-6	1	%	61.0	75.7	79.2	95.7	84.4	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	78.1	80.5	73.3	83.2	79.6	
Anthracene-d10	1719-06-8	1	%	80.8	80.3	77.0	85.2	87.6	
4-Terphenyl-d14	1718-51-0	1	%	81.9	81.5	78.6	85.3	87.2	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	97.8	96.9	101	109	96.2	
Toluene-D8	2037-26-5	2	%	102	101	120	122	101	
4-Bromofluorobenzene	460-00-4	2	%	116	117	129	126	118	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	----	70.1	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517	
Client sampling date / time		16-May-2017 00:00		16-May-2017 00:00		16-May-2017 00:00		16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	----	----	----	7.12	6.93	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	1680	124	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	185	43	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	185	43	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	201	<1	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	248	28	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	----	----	----	776	6	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	----	----	----	104	4	
Magnesium	7439-95-4	1	mg/L	----	----	----	53	5	
Sodium	7440-23-5	1	mg/L	----	----	----	417	4	
Potassium	7440-09-7	1	mg/L	----	----	----	21	2	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.10	0.11	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	0.025	0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	0.003	0.002	
Copper	7440-50-8	0.001	mg/L	----	----	----	0.002	<0.001	
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.049	0.017	
Nickel	7440-02-0	0.001	mg/L	----	----	----	0.004	0.005	
Selenium	7782-49-2	0.01	mg/L	----	----	----	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	----	0.012	0.007	
Iron	7439-89-6	0.05	mg/L	----	----	----	10.2	2.02	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	----	<0.01	----	0.70	11.0	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	0.100	0.010	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	0.006	0.026	
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	0.004	0.004	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	0.008	0.020	
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	0.006	0.008	
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	0.023	0.033	
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.055	0.057	
Selenium	7782-49-2	0.01	mg/L	----	<0.01	----	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	----	<0.05	----	20.2	18.9	
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	----	<0.0001	----	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	----	----	----	0.2	0.9	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	1.64	0.22	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	1.64	0.22	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	----	----	----	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	----	----	----	0.03	0.03	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	0.03	0.03	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	0.05	0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	----	----	----	29.8	1.03	
Total Cations	----	0.01	meq/L	----	----	----	----	0.94	
Total Cations	----	0.01	meq/L	----	----	----	28.2	----	
Ionic Balance	----	0.01	%	----	----	----	----	4.28	
Ionic Balance	----	0.01	%	----	----	----	2.66	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	----	----	----	32	7	
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	----	
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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	----	----	----	10	----	
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	----	
1,1,1,2,2-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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP074F: Halogenated Aromatic Compounds - Continued									
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	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	----	----	----	<1.0	<1.0	
Acenaphthylene	208-96-8	1	µg/L	----	----	----	<1.0	<1.0	
Acenaphthene	83-32-9	1	µg/L	----	----	----	<1.0	<1.0	
Fluorene	86-73-7	1	µg/L	----	----	----	<1.0	<1.0	
Phenanthrene	85-01-8	1	µg/L	----	----	----	<1.0	<1.0	
Anthracene	120-12-7	1	µg/L	----	----	----	<1.0	<1.0	
Fluoranthene	206-44-0	1	µg/L	----	----	----	<1.0	<1.0	
Pyrene	129-00-0	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(a)anthracene	56-55-3	1	µg/L	----	----	----	<1.0	<1.0	
Chrysene	218-01-9	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(b+j)fluoranthene	205-99-2	205-82-3	1	µg/L	----	----	<1.0	<1.0	
Benzo(k)fluoranthene	207-08-9	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	----	----	<0.5	<0.5	
Indeno(1,2,3.cd)pyrene	193-39-5	1	µg/L	----	----	----	<1.0	<1.0	
Dibenz(a,h)anthracene	53-70-3	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(g,h,i)perylene	191-24-2	1	µg/L	----	----	----	<1.0	<1.0	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	----	----	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	----	----	<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	
C15 - C28 Fraction	----	100	µg/L	----	<100	----	<100	<100	
C29 - C36 Fraction	----	50	µg/L	----	<50	----	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	----	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
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	
>C16 - C34 Fraction	----	100	µg/L	----	<100	----	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	<100	<100	
[^] >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	----	<100	<100	
[^] >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	----	<100	<100	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<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	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	----	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	----	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	----	----	----	<0.02	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	----	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	----	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	----	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	----	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	----	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	----	<0.02	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	----	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	----	----	----	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	----	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	----	<0.01	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	----	----	----	108	----	
Toluene-D8	2037-26-5	1	%	----	----	----	115	----	
4-Bromofluorobenzene	460-00-4	1	%	----	----	----	106	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	----	----	----	34.2	33.0	
2-Chlorophenol-D4	93951-73-6	1	%	----	----	----	81.8	81.4	
2,4,6-Tribromophenol	118-79-6	1	%	----	----	----	75.4	73.6	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	----	----	----	76.7	75.2	
Anthracene-d10	1719-06-8	1	%	----	----	----	79.5	86.8	
4-Terphenyl-d14	1718-51-0	1	%	----	----	----	79.4	88.9	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	96.4	94.9	85.2	108	92.8	
Toluene-D8	2037-26-5	2	%	92.1	87.3	82.9	113	90.7	
4-Bromofluorobenzene	460-00-4	2	%	102	107	101	124	105	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	----	----	----	78.5	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time		16-May-2017 00:00			16-May-2017 00:00		16-May-2017 00:00		16-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.75	6.85	----	----	7.59	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	10100	6130	----	----	9210	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	804	1230	----	----	452	
Total Alkalinity as CaCO3	----	1	mg/L	804	1230	----	----	452	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	996	1150	----	----	1010	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	1600	1700	----	----	1480	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	5510	1580	----	----	5140	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	272	309	----	----	265	
Magnesium	7439-95-4	1	mg/L	493	222	----	----	375	
Sodium	7440-23-5	1	mg/L	2900	1370	----	----	2690	
Potassium	7440-09-7	1	mg/L	98	172	----	----	134	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.03	0.01	----	----	0.04	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.004	----	----	0.006	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.003	0.002	----	----	0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	0.005	----	----	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	0.003	----	----	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.038	0.513	----	----	0.232	
Nickel	7440-02-0	0.001	mg/L	0.119	0.054	----	----	0.044	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.014	0.026	----	----	0.014	
Iron	7439-89-6	0.05	mg/L	1.22	0.39	----	----	1.07	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	3.30	19.6	<0.01	----	6.42	
Arsenic	7440-38-2	0.001	mg/L	0.007	0.046	<0.001	----	0.016	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.013	0.060	<0.001	----	0.017	
Copper	7440-50-8	0.001	mg/L	0.005	0.038	<0.001	----	0.011	
Nickel	7440-02-0	0.001	mg/L	0.147	0.106	<0.001	----	0.056	
Lead	7439-92-1	0.001	mg/L	0.003	0.129	<0.001	----	0.006	
Zinc	7440-66-6	0.005	mg/L	0.106	0.150	<0.005	----	0.028	
Manganese	7439-96-5	0.001	mg/L	0.068	0.681	----	----	0.282	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	<0.01	
Iron	7439-89-6	0.05	mg/L	7.12	34.9	<0.05	----	9.38	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	<0.0001	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.3	0.9	----	----	0.6	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	11.2	2.66	----	----	3.61	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	11.1	2.66	----	----	3.60	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.11	----	----	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.12	102	----	----	0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.12	102	----	----	0.01	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.73	0.01	----	----	0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	192	93.1	----	----	175	
Total Cations	----	0.01	meq/L	183	97.7	----	----	164	
Ionic Balance	----	0.01	%	2.52	2.41	----	----	3.10	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	44	56	----	----	13	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
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	
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	<10	<20	----	----	<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	5	<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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	<3	<1	----	----	<3	
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	75	<1	----	----	4	
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	<1	----	----	<1	
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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	110	<100	----	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	110	<100	----	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	<100	
EP080: BTEXN									
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	%	119	91.8	----	----	105	
Toluene-D8	2037-26-5	1	%	121	88.1	----	----	104	
4-Bromofluorobenzene	460-00-4	1	%	121	89.1	----	----	108	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	37.1	27.9	----	----	36.8	
2-Chlorophenol-D4	93951-73-6	1	%	89.6	63.2	----	----	85.8	
2,4,6-Tribromophenol	118-79-6	1	%	76.8	71.1	----	----	70.5	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	78.1	59.1	----	----	77.4	
Anthracene-d10	1719-06-8	1	%	87.8	78.1	----	----	81.0	
4-Terphenyl-d14	1718-51-0	1	%	87.0	84.0	----	----	82.6	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	114	91.5	86.5	89.6	99.3	
Toluene-D8	2037-26-5	2	%	123	88.9	81.4	85.4	108	
4-Bromofluorobenzene	460-00-4	2	%	129	105	92.1	111	125	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.41	7.44	7.60	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2020	12800	4900	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	726	1220	652	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	726	1220	652	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	135	1340	306	----	----	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	221	1970	515	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	502	6510	2560	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	154	429	224	----	----	
Magnesium	7439-95-4	1	mg/L	68	434	100	----	----	
Sodium	7440-23-5	1	mg/L	360	3840	1450	----	----	
Potassium	7440-09-7	1	mg/L	16	136	56	----	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.40	0.08	0.04	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.020	0.010	0.006	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0005	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	0.007	0.004	0.002	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	0.005	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.679	0.983	0.623	----	----	
Nickel	7440-02-0	0.001	mg/L	0.026	0.059	0.057	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	0.010	0.028	0.006	----	----	
Iron	7439-89-6	0.05	mg/L	2.40	11.5	1.13	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	38.5	8.75	11.4	<0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.085	0.024	0.036	<0.001	<0.001	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0009	0.0002	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.130	0.028	0.037	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.032	0.021	0.029	<0.001	<0.001	
Nickel	7440-02-0	0.001	mg/L	0.105	0.086	0.122	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	0.061	0.013	0.076	<0.001	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.121	0.073	0.135	<0.005	<0.005	
Manganese	7439-96-5	0.001	mg/L	0.878	1.13	0.793	----	----	
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	27.8	24.1	19.8	<0.05	<0.05	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	<0.1	1.3	0.9	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	3.18	10.5	7.77	----	----	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	3.18	10.5	7.74	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.04	<0.01	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	4.12	<0.01	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	4.16	<0.01	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.50	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	31.5	236	91.6	----	----	
Total Cations	----	0.01	meq/L	29.3	228	83.9	----	----	
Ionic Balance	----	0.01	%	3.50	1.79	4.39	----	----	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	73	67	27	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
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	----	----	----	
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	<10	<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	1	<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	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	<2	<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	----	----	----	
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	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
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	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	<1.0	----	----	
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	<1.0	----	----	
Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	<1.0	----	----	
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	<1.0	----	----	
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	<1.0	----	----	
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	<1.0	----	----	
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	<1.0	----	----	
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	<1.0	----	----	
Chrysene	218-01-9	1	µg/L	<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	----	----	
Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	<1.0	----	----	
Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	<1.0	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	120	130	350	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	120	130	350	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	130	130	310	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	130	130	310	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
EP080: BTEXN									
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	%	110	95.8	----	----	----	
Toluene-D8	2037-26-5	1	%	120	88.7	----	----	----	
4-Bromofluorobenzene	460-00-4	1	%	117	94.8	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	30.0	36.6	31.8	----	----	
2-Chlorophenol-D4	93951-73-6	1	%	74.6	87.9	79.2	----	----	
2,4,6-Tribromophenol	118-79-6	1	%	77.5	78.8	71.8	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	75.8	83.0	71.6	----	----	
Anthracene-d10	1719-06-8	1	%	84.7	88.5	74.0	----	----	
4-Terphenyl-d14	1718-51-0	1	%	78.7	81.4	67.9	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	106	93.6	112	90.4	93.0	
Toluene-D8	2037-26-5	2	%	125	89.6	125	79.8	86.2	
4-Bromofluorobenzene	460-00-4	2	%	124	109	128	90.4	94.9	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			F3_170517	QC117_170517	QC118_170517	----	----
Client sampling date / time		16-May-2017 00:00			16-May-2017 00:00	16-May-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1706246-021	EM1706246-022	EM1706246-023	-----	-----	-----
				Result	Result	Result	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.56	----	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	282	----	----	----	----	----
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	220	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	220	----	----	----	----	----
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	13	----	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	14	----	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	17	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	17	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	29	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	14	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.03	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.003	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.640	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.024	----	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.013	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	6.97	----	----	----	----	----
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	2.93	<0.01	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.006	<0.001	<0.001	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	F3_170517	QC117_170517	QC118_170517	----	----
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1706246-021	EM1706246-022	EM1706246-023	-----	-----	
				Result	Result	Result	----	----	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	0.015	<0.001	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	0.009	<0.001	<0.001	----	----	
Nickel	7440-02-0	0.001	mg/L	0.041	<0.001	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	0.012	<0.001	<0.001	----	----	
Zinc	7440-66-6	0.005	mg/L	0.161	<0.005	<0.005	----	----	
Manganese	7439-96-5	0.001	mg/L	0.841	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Iron	7439-89-6	0.05	mg/L	17.2	<0.05	<0.05	----	----	
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	<0.0001	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.5	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	1.78	----	----	----	----	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	1.78	----	----	----	----	
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	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	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	4.79	----	----	----	----	
Total Cations	----	0.01	meq/L	4.37	----	----	----	----	
Ionic Balance	----	0.01	%	4.65	----	----	----	----	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	7	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	F3_170517	QC117_170517	QC118_170517	----	----
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1706246-021	EM1706246-022	EM1706246-023	-----	-----	
				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	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----	
C15 - C28 Fraction	----	100	µg/L	230	<100	<100	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	230	<50	<50	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	230	<100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	230	<100	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	F3_170517	QC117_170517	QC118_170517	----	----
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1706246-021	EM1706246-022	EM1706246-023	-----	-----	
				Result	Result	Result	----	----	
EP080: BTEXN - Continued									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	31.1	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	1	%	79.3	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	1	%	74.1	----	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	73.8	----	----	----	----	
Anthracene-d10	1719-06-8	1	%	79.0	----	----	----	----	
4-Terphenyl-d14	1718-51-0	1	%	71.3	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	97.2	93.9	91.1	----	----	
Toluene-D8	2037-26-5	2	%	91.2	89.6	82.9	----	----	
4-Bromofluorobenzene	460-00-4	2	%	96.9	93.9	91.8	----	----	



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
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	130

QUALITY CONTROL REPORT

Work Order	: EM1706246	Page	: 1 of 23
Amendment	: 1		
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 17-May-2017
Order number	: 60537182 3.5	Date Analysis Commenced	: 18-May-2017
C-O-C number	: ----	Issue Date	: 25-May-2017
Sampler	: NK/MW/JM		
Site	: Fishermans Bend		
Quote number	: ME/199/16		
No. of samples received	: 23		
No. of samples analysed	: 23		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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: 894514)									
EM1706246-002	GW46_160517	EA005-P: pH Value	----	0.01	pH Unit	7.14	7.17	0.419	0% - 20%
EM1706228-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.57	5.52	0.902	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 894516)									
EM1706255-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.97	6.97	0.00	0% - 20%
EM1706246-017	GW50_160517	EA005-P: pH Value	----	0.01	pH Unit	7.44	7.44	0.00	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 897094)									
EM1706104-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	52	47	8.75	No Limit
EM1706143-009	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	80	78	3.80	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 897096)									
EM1706246-005	GW69_160517	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2540	2620	2.94	0% - 20%
EM1706246-021	F3_170517	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	282	244	14.3	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 894512)									
EM1706224-008	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	98	99	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	98	99	0.00	0% - 20%
EM1706228-005	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	6	6	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	6	6	0.00	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 894517)									
EM1706255-003	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	578	581	0.528	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: 894517) - continued									
EM1706255-003	Anonymous	ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	578	581	0.528	0% - 20%
EM1706246-017	GW50_160517	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	1220	1230	0.946	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	1220	1230	0.946	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 894589)									
EM1706246-001	GW70_160517	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	47	49	4.58	0% - 20%
EM1706246-015	GW47_160517	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1010	1000	0.734	0% - 20%
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 900294)									
EM1705994-021	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	699	663	5.32	0% - 20%
EM1706144-001	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	74	84	12.1	0% - 20%
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 900295)									
EM1706246-016	GW54_160517	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	221	228	2.85	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 894590)									
EM1706246-001	GW70_160517	ED045G: Chloride	16887-00-6	1	mg/L	32	32	0.00	0% - 20%
EM1706246-015	GW47_160517	ED045G: Chloride	16887-00-6	1	mg/L	5140	5150	0.145	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 895407)									
EM1706246-002	GW46_160517	ED093F: Calcium	7440-70-2	1	mg/L	173	173	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	46	46	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	79	79	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	14	14	0.00	0% - 50%
EM1706246-015	GW47_160517	ED093F: Calcium	7440-70-2	1	mg/L	265	268	1.15	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	375	375	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	2690	2660	1.28	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	134	133	0.802	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 895405)									
EM1706226-022	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0006	0.0006	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	<0.002	<0.002	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.002	0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.008	0.008	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.858	0.837	2.47	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.018	0.017	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.011	0.011	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	11.4	11.0	4.04	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	0.07	0.08	0.00	No Limit
		EM1706226-061	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0002	<0.0002
EG020A-F: Arsenic	7440-38-2			0.001	mg/L	0.003	0.003	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: 895405) - continued									
EM1706226-061	Anonymous	EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.010	<0.010	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.02	<0.02	0.00	No Limit
		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	<0.05	<0.05	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 895408)									
EM1706307-003	Anonymous	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	0.012	0.012	0.00	0% - 50%
		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	0.246	0.250	1.35	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<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	<0.05	<0.05	0.00	No Limit
		EM1706246-016	GW54_160517	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001
EG020A-F: Arsenic	7440-38-2			0.001	mg/L	0.020	0.020	0.00	0% - 20%
EG020A-F: Chromium	7440-47-3			0.001	mg/L	0.007	0.007	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	0.679	0.677	0.374	0% - 20%
EG020A-F: Nickel	7440-02-0			0.001	mg/L	0.026	0.026	0.00	0% - 20%
EG020A-F: Zinc	7440-66-6			0.005	mg/L	0.010	0.011	0.00	No Limit
EG020A-F: Aluminium	7429-90-5			0.01	mg/L	0.40	0.40	0.00	0% - 20%
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	2.40	2.37	1.23	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 895719)									
EM1706145-001	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: Manganese	7439-96-5	0.001	mg/L	0.024	0.024	0.00	0% - 20%
		EG020A-T: Nickel	7440-02-0	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: 895719) - continued									
EM1706145-001	Anonymous	EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.022	0.021	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.02	0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EM1706227-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0222	0.0220	0.943	0% - 20%
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.070	0.070	0.00	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.137	0.136	0.00	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.103	0.101	2.07	0% - 20%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	23.6	23.5	0.316	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.170	0.168	1.30	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	59.9	60.1	0.265	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	5.49	5.48	0.294	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	151	151	0.00	0% - 20%		
EG020T: Total Metals by ICP-MS (QC Lot: 895721)									
EM1706246-010	GW49_160517	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	0.010	0.012	17.2	0% - 50%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.026	0.032	17.0	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.005	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.008	0.009	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.057	0.064	12.8	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.020	0.023	13.4	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.033	0.036	8.65	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	11.0	9.49	14.9	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	18.9	21.0	10.6	0% - 20%		
EM1706246-020	QC17_160517	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: Manganese	7439-96-5	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EG035F: Dissolved Mercury by FIMS (QC Lot: 895406)									
EM1706226-022	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0003	0.0002	45.7	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 (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 895406) - continued									
EM1706226-061	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: 895409)									
EM1706246-016	GW54_160517	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: 903145)									
EM1706204-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0010	<0.0010	0.00	No Limit
EM1706246-005	GW69_160517	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 903146)									
EM1706246-019	QC16_160517	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1706358-072	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 894511)									
EM1706222-010	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	0.00	No Limit
EM1706246-002	GW46_160517	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.7	0.7	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 894518)									
EM1706246-017	GW50_160517	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.3	1.4	0.00	0% - 50%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 900216)									
EM1706026-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.00	No Limit
EM1706243-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.10	0.10	0.00	0% - 50%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 900218)									
EM1706246-016	GW54_160517	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	3.18	3.87	19.4	0% - 20%
EM1706312-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	10.2	10.9	6.98	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 894591)									
EM1706246-001	GW70_160517	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1706246-015	GW47_160517	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 900217)									
EM1706026-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	28.2	30.3	7.29	0% - 20%
EM1706243-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	4.99	4.97	0.385	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 900219)									
EM1706246-016	GW54_160517	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.01	55.6	No Limit
EM1706312-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	33.8	33.7	0.274	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 894592)									
EM1706246-001	GW70_160517	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1706246-015	GW47_160517	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	0.01	0.00	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 900494)									
EM1706238-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.00	No Limit
EM1706246-004	GW65_160517	EP005: Total Organic Carbon	----	1	mg/L	73	67	8.95	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 896901)									
EM1706246-017	GW50_160517	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



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: 896901) - continued									
EM1706246-017	GW50_160517	EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	<1	0.00	No Limit
		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
EP074B: Oxygenated Compounds (QC Lot: 896901)									
EM1706246-017	GW50_160517	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: 896901)									
EM1706246-017	GW50_160517	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	<1	0.00	No Limit
EP074D: Fumigants (QC Lot: 896901)									
EM1706246-017	GW50_160517	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: 896901)									
EM1706246-017	GW50_160517	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



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: 896901) - continued									
EM1706246-017	GW50_160517	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: 896901)									
EM1706246-017	GW50_160517	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: 896901)									
EM1706246-017	GW50_160517	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: 896901)									
EM1706246-017	GW50_160517	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 894498)									
EM1706246-007	QC113_160517	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	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 (%)	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 896900)										
EM1706246-012	GW56_160517	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EM1706246-017	GW50_160517	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 896905)										
EM1706245-038	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EM1706266-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 894498)										
EM1706246-007	QC113_160517	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit	
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 896900)										
EM1706246-012	GW56_160517	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EM1706246-017	GW50_160517	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: 896905)										
EM1706245-038	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EM1706266-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EP080: BTEXN (QC Lot: 896900)										
EM1706246-012	GW56_160517	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	
EM1706246-017	GW50_160517	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
		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: 896905)										
EM1706245-038	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	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	
EM1706266-005	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
		EP080: Benzene	71-43-2	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 (%)		
EP080: BTEXN (QC Lot: 896905) - continued											
EM1706266-005	Anonymous	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		
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 900101)											
EM1706246-003	GW61_160517	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit		
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.02	0.00	No Limit		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.02	<0.02	0.00	No Limit		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
ES1711914-006	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit		
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 900101)											
EM1706246-003	GW61_160517	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.05	0.05	0.00	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit		
		ES1711914-006	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
				EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
				EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	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 (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 900101) - continued									
ES1711914-006	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 900101)									
EM1706246-003	GW61_160517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1711914-006	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 900101)									
EM1706246-003	GW61_160517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1711914-006	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit

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 Work Order : EM1706246 Amendment 1
 Client : AECOM Australia Pty Ltd
 Project : 60537182



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 (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 900101) - continued									
ES1711914-006	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 900101)									
EM1706246-003	GW61_160517	EP231X: Sum of PFAS	----	0.01	µg/L	0.10	0.09	10.5	0% - 50%
ES1711914-006	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	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: 897094)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	102	96	106	
				<10	293 mg/L	98.4	96	106	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 897096)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	98.6	96	106	
				<10	293 mg/L	102	96	106	
ED037P: Alkalinity by PC Titrator (QCLot: 894512)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	91.4	90	110	
ED037P: Alkalinity by PC Titrator (QCLot: 894517)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	99.1	90	110	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 894589)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	110	92	115	
				<1	100 mg/L	106	92	115	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<1	500 mg/L	98.0	85	118	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900295)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<1	500 mg/L	92.8	85	118	
ED045G: Chloride by Discrete Analyser (QCLot: 894590)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	109	89	117	
				<1	1000 mg/L	106	92	112	
ED093F: Dissolved Major Cations (QCLot: 895407)									
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	100	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	99.4	89	107	
EG020F: Dissolved Metals by ICP-MS (QCLot: 895405)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	98.9	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	92.1	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	98.6	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.3	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	89.7	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	89.4	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	89.0	87	109	



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	
EG020F: Dissolved Metals by ICP-MS (QCLot: 895405) - continued									
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.7	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	91.4	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.2	94	106	
EG020F: Dissolved Metals by ICP-MS (QCLot: 895408)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	99.5	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	89.1	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	89.6	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.4	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.9	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	89.6	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	89.9	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	95.1	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.6	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.2	94	106	
EG020T: Total Metals by ICP-MS (QCLot: 895719)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	105	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	105	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.4	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.1	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.4	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.4	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.4	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.9	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.8	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100.0	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	99	110	
EG020T: Total Metals by ICP-MS (QCLot: 895721)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	104	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.7	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.9	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.5	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.4	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.8	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.9	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	95.3	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	102	88	112	



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
EG020T: Total Metals by ICP-MS (QCLot: 895721) - continued									
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	105	99	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 895406)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.7	88	117	
EG035F: Dissolved Mercury by FIMS (QCLot: 895409)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	107	88	117	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 903145)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	92.8	87	113	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 903146)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.5	87	113	
EK040P: Fluoride by PC Titrator (QCLot: 894511)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	92.6	85	112	
EK040P: Fluoride by PC Titrator (QCLot: 894518)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	109	85	112	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 900216)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	95.3	80	115	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 900218)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	97.3	80	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 894591)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	94	107	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 900217)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	107	89	114	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 900219)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	89	114	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 894592)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	108	94	108	
EP005: Total Organic Carbon (TOC) (QCLot: 900494)									
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	93.5	81	109	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 896901)									
EP074-WF: Benzene	71-43-2	1	µg/L	<1	20 µg/L	98.6	81	119	
EP074-WF: Toluene	108-88-3	1	µg/L	<1	20 µg/L	93.7	84	117	
EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	20 µg/L	100	83	114	
EP074-WF: meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	40 µg/L	96.1	81	116	
EP074-WF: Styrene	100-42-5	1	µg/L	<1	20 µg/L	93.2	82	118	
EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	20 µg/L	96.2	85	115	
EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	20 µg/L	96.4	81	113	



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: 896901) - continued									
EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	20 µg/L	92.1	76	111	
EP074-WF: 1,3,5-Trimethylbenzene	108-67-8	1	µg/L	<1	20 µg/L	96.7	79	109	
EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	20 µg/L	97.9	77	111	
EP074-WF: 1,2,4-Trimethylbenzene	95-63-6	1	µg/L	<1	20 µg/L	103	79	108	
EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	20 µg/L	101	80	110	
EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	20 µg/L	95.1	75	111	
EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	20 µg/L	88.4	68	111	
EP074B: Oxygenated Compounds (QCLot: 896901)									
EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	200 µg/L	87.9	69	147	
EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	200 µg/L	85.7	77	124	
EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	200 µg/L	84.5	71	131	
EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	200 µg/L	89.0	73	128	
EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	200 µg/L	85.9	75	129	
EP074C: Sulfonated Compounds (QCLot: 896901)									
EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	20 µg/L	66.9	64	119	
EP074D: Fumigants (QCLot: 896901)									
EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	20 µg/L	92.0	74	117	
EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	20 µg/L	95.1	83	118	
EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	20 µg/L	88.8	74	109	
EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	20 µg/L	83.6	70	109	
EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	20 µg/L	83.5	81	116	
EP074E: Halogenated Aliphatic Compounds (QCLot: 896901)									
EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	200 µg/L	68.3	61	137	
EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	200 µg/L	70.7	66	137	
EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	200 µg/L	75.7	67	135	
EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	200 µg/L	75.0	52	128	
EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	200 µg/L	87.3	76	125	
EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	200 µg/L	88.9	74	123	
EP074-WF: 1,1-Dichloroethene	75-35-4	1	µg/L	<1	20 µg/L	89.3	75	120	
EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	20 µg/L	84.2	37	120	
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	20 µg/L	119	72	159	
EP074-WF: trans-1,2-Dichloroethene	156-60-5	1	µg/L	<1	20 µg/L	88.6	78	117	
EP074-WF: 1,1-Dichloroethane	75-34-3	1	µg/L	<1	20 µg/L	96.0	81	118	
EP074-WF: cis-1,2-Dichloroethene	156-59-2	1	µg/L	<1	20 µg/L	99.7	83	118	
EP074-WF: 1,1,1-Trichloroethane	71-55-6	1	µg/L	<1	20 µg/L	95.5	76	115	
EP074-WF: 1,1-Dichloropropylene	563-58-6	1	µg/L	<1	20 µg/L	85.9	75	117	
EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	20 µg/L	89.8	72	111	
EP074-WF: 1,2-Dichloroethane	107-06-2	1	µg/L	<1	20 µg/L	91.0	81	120	



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
EP074E: Halogenated Aliphatic Compounds (QCLot: 896901) - continued								
EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	20 µg/L	96.1	78	116
EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	20 µg/L	89.8	79	116
EP074-WF: 1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	20 µg/L	95.1	85	119
EP074-WF: 1.3-Dichloropropane	142-28-9	1	µg/L	<1	20 µg/L	93.3	85	119
EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	20 µg/L	87.0	76	120
EP074-WF: 1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	20 µg/L	92.6	78	110
EP074-WF: trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	20 µg/L	70.1	64	118
EP074-WF: cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	20 µg/L	64.5	51	113
EP074-WF: 1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	20 µg/L	90.8	85	121
EP074-WF: 1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	20 µg/L	86.6	84	118
EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	20 µg/L	99.4	64	109
EP074-WF: 1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	20 µg/L	81.1	65	115
EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	20 µg/L	104	70	121
EP074F: Halogenated Aromatic Compounds (QCLot: 896901)								
EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	20 µg/L	96.0	85	115
EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	20 µg/L	93.6	82	116
EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	20 µg/L	101	81	112
EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	20 µg/L	97.3	80	110
EP074-WF: 1.3-Dichlorobenzene	541-73-1	1	µg/L	<1	20 µg/L	99.3	80	110
EP074-WF: 1.4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	20 µg/L	101	80	112
EP074-WF: 1.2-Dichlorobenzene	95-50-1	1	µg/L	<1	20 µg/L	94.4	84	111
EP074-WF: 1.2.4-Trichlorobenzene	120-82-1	1	µg/L	<1	20 µg/L	100	70	114
EP074-WF: 1.2.3-Trichlorobenzene	87-61-6	1	µg/L	<1	20 µg/L	99.3	78	116
EP074G: Trihalomethanes (QCLot: 896901)								
EP074-WF: Chloroform	67-66-3	1	µg/L	<1	20 µg/L	99.8	82	118
EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	20 µg/L	93.3	75	112
EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	20 µg/L	85.6	73	108
EP074-WF: Bromoform	75-25-2	1	µg/L	<1	20 µg/L	78.6	68	107
EP074H: Naphthalene (QCLot: 896901)								
EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	106	80	116
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 894497)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	87.6	39	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	92.7	40	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	95.7	47	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	89.0	51	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	95.0	53	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	101	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	95.0	59	123



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: 894497) - continued									
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	96.1	58	123	
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	90.3	52	126	
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	90.3	55	123	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	90.7	52	131	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	84.9	57	126	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	88.2	56	126	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	88.3	53	123	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	87.9	53	125	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	88.1	53	125	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894498)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	108	53	123	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	117	57	133	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	102	55	141	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 896900)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	95.9	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 896905)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	90.4	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894498)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	112	54	122	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	106	56	132	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	111	51	137	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 896900)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	92.5	65	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 896905)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	89.5	65	125	
EP080: BTEXN (QCLot: 896900)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	103	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	101	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	102	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	100	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	100.0	78	128	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	125	71	129	
EP080: BTEXN (QCLot: 896905)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	97.4	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.0	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	94.3	72	124	



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	
EP080: BTEXN (QCLot: 896905) - continued									
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	95.3	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	101	78	128	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	109	71	129	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 900101)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	91.6	70	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	107	70	130	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	107	70	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	110	70	130	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	87.0	70	130	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	106	70	130	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 900101)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	107	70	130	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	82.6	70	130	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	104	70	130	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	112	70	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	118	70	130	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	86.2	70	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	92.4	70	130	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	103	70	130	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	93.8	70	130	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	101	70	130	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	106	70	124	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 900101)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	80.0	70	130	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	109	70	130	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	122	70	129	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	1.25 µg/L	96.1	70	129	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	101	70	126	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	80.4	70	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	90.6	70	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 900101)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	105	70	130	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	78.0	70	130	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	97.4	70	130	



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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 900101) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	87.4	70	130

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low High	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 894589)							
EM1706246-002	GW46_160517	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)							
EM1705994-023	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	120	70	130
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900295)							
EM1706246-017	GW50_160517	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	88.6	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 894590)							
EM1706246-002	GW46_160517	ED045G: Chloride	16887-00-6	400 mg/L	98.4	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 895405)							
EM1706226-022	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	95.3	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	101	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	81.1	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	86.6	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	84.6	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	# Not Determined	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	89.6	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	83.5	75	131
EG020F: Dissolved Metals by ICP-MS (QCLot: 895408)							
EM1706246-016	GW54_160517	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	99.6	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	99.2	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	94.6	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	94.2	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	94.0	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	91.3	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	94.3	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	94.3	75	131



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: 895719)							
EM1706145-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	96.1	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	92.9	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	90.4	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	90.9	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	102	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	91.9	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	93.5	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	96.1	74	116
EG020T: Total Metals by ICP-MS (QCLot: 895721)							
EM1706246-010	GW49_160517	EG020A-T: Arsenic	7440-38-2	1 mg/L	97.4	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	93.3	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	91.0	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	95.4	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	104	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	93.0	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	97.1	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	99.7	74	116
EG035F: Dissolved Mercury by FIMS (QCLot: 895406)							
EM1706226-023	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	82.2	70	120
EG035F: Dissolved Mercury by FIMS (QCLot: 895409)							
EM1706246-017	GW50_160517	EG035F: Mercury	7439-97-6	0.01 mg/L	72.6	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 903145)							
EM1706204-002	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	88.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 903146)							
EM1706246-020	QC17_160517	EG035T: Mercury	7439-97-6	0.01 mg/L	96.1	70	130
EK040P: Fluoride by PC Titrator (QCLot: 894511)							
EM1706222-005	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	93.0	70	130
EK040P: Fluoride by PC Titrator (QCLot: 894518)							
EM1706246-018	GW45_160517	EK040P: Fluoride	16984-48-8	5 mg/L	106	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 900216)							
EM1706026-002	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	87.4	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 900218)							
EM1706246-017	GW50_160517	EK055G: Ammonia as N	7664-41-7	1 mg/L	# Not Determined	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 894591)							
EM1706246-002	GW46_160517	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	93.6	80	114



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
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 900217)							
EM1706026-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	123	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 900219)							
EM1706246-017	GW50_160517	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 894592)							
EM1706246-002	GW46_160517	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	96.2	79	123
EP005: Total Organic Carbon (TOC) (QCLot: 900494)							
EM1706238-002	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	91.5	80	114
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 896901)							
EM1706246-009	GW39_160517	EP074-WF: Benzene	71-43-2	20 µg/L	127	76	128
		EP074-WF: Toluene	108-88-3	20 µg/L	106	72	132
EP074E: Halogenated Aliphatic Compounds (QCLot: 896901)							
EM1706246-009	GW39_160517	EP074-WF: 1,1-Dichloroethene	75-35-4	20 µg/L	# 119	63	129
		EP074-WF: Trichloroethene	79-01-6	20 µg/L	107	64	126
EP074F: Halogenated Aromatic Compounds (QCLot: 896901)							
EM1706246-009	GW39_160517	EP074-WF: Chlorobenzene	108-90-7	20 µg/L	107	81	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 896900)							
EM1706246-009	GW39_160517	EP080: C6 - C9 Fraction	----	280 µg/L	113	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 896905)							
EM1706266-003	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	59.5	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 896900)							
EM1706246-009	GW39_160517	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	110	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 896905)							
EM1706266-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	59.8	44	122
EP080: BTEXN (QCLot: 896900)							
EM1706246-009	GW39_160517	EP080: Benzene	71-43-2	20 µg/L	120	68	130
		EP080: Toluene	108-88-3	20 µg/L	119	72	132
EP080: BTEXN (QCLot: 896905)							
EM1706266-003	Anonymous	EP080: Benzene	71-43-2	20 µg/L	78.2	68	130
		EP080: Toluene	108-88-3	20 µg/L	76.4	72	132
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 900101)							
EM1706246-003	GW61_160517	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	103	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	122	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	81.6	50	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	SpikeRecovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 900101) - continued							
EM1706246-003	GW61_160517	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	124	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	122	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	118	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 900101)							
EM1706246-003	GW61_160517	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	110	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	127	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	95.0	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	91.6	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	126	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	111	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	107	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	106	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	68.4	50	130
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.5 µg/L	110	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	76.6	50	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 900101)							
EM1706246-003	GW61_160517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	93.4	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	117	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	96.1	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	1.25 µg/L	103	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	76.5	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	103	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	117	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 900101)							
EM1706246-003	GW61_160517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	109	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	80.2	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	55.2	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	119	50	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1706246	Page	: 1 of 17
Amendment	: 1		
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 17-May-2017
Site	: Fishermans Bend	Issue Date	: 25-May-2017
Sampler	: NK/MW/JM	No. of samples received	: 23
Order number	: 60537182 3.5	No. of samples analysed	: 23

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	EM1706246--002	GW46_160517	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG020F: Dissolved Metals by ICP-MS	EM1706226--022	Anonymous	Manganese	7439-96-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK055G: Ammonia as N by Discrete Analyser	EM1706246--017	GW50_160517	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EM1706246--017	GW50_160517	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP074E: Halogenated Aliphatic Compounds	EM1706246--009	GW39_160517	1.1-Dichloroethene	75-35-4	119 %	63-129%	Recovery greater than upper control limit

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	----	----	----	18-May-2017	16-May-2017	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	14	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatle Fraction	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	14	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatle Fraction	0	20	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) GW70_160517, GW46_160517, GW61_160517, GW65_160517, GW69_160517, GW39_160517, GW49_160517, GW44_160517, GW56_160517, GW47_160517, GW54_160517, GW50_160517, GW45_160517, F3_170517	16-May-2017	---	---	---	18-May-2017	16-May-2017	✖
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) GW70_160517, GW46_160517, GW61_160517, GW65_160517, GW69_160517, GW39_160517, GW49_160517, GW44_160517, GW56_160517, GW47_160517, GW54_160517, GW50_160517, GW45_160517, F3_170517	16-May-2017	---	---	---	19-May-2017	23-May-2017	✔
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) GW70_160517, GW46_160517, GW61_160517, GW65_160517, GW69_160517, GW39_160517, GW49_160517, GW44_160517, GW56_160517, GW47_160517, GW54_160517, GW50_160517, GW45_160517, F3_170517	16-May-2017	---	---	---	18-May-2017	30-May-2017	✔



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) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517, GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	19-May-2017	13-Jun-2017	✓
ED043: Total Oxidised Sulfur as SO4 2-							
Clear Plastic Bottle - Natural (ED043) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517, GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	22-May-2017	13-Jun-2017	✓	22-May-2017	13-Jun-2017	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517, GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	19-May-2017	13-Jun-2017	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517, GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	23-May-2017	13-Jun-2017	✓



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) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	18-May-2017	12-Nov-2017	✓
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW47_160517, GW50_160517, QC16_160517, F3_170517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, QC115_160517, GW54_160517, GW45_160517, QC17_160517, QC117_170517	16-May-2017	19-May-2017	12-Nov-2017	✓	19-May-2017	12-Nov-2017	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) QC113_160517,	QC118_170517	16-May-2017	19-May-2017	12-Nov-2017	✓	19-May-2017	12-Nov-2017	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	19-May-2017	13-Jun-2017	✓



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	
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW47_160517, GW50_160517, QC16_160517, F3_170517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, QC115_160517, GW54_160517, GW45_160517, QC17_160517, QC117_170517	16-May-2017	----	----	----	24-May-2017	13-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) QC113_160517,	QC118_170517	16-May-2017	----	----	----	24-May-2017	13-Jun-2017	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	18-May-2017	13-Jun-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	23-May-2017	13-Jun-2017	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	18-May-2017	18-May-2017	✓



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	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	22-May-2017	13-Jun-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	18-May-2017	18-May-2017	✓
EP005: Total Organic Carbon (TOC)								
Amber TOC Vial - Sulfuric Acid (EP005) GW39_160517, GW44_160517	GW49_160517,	16-May-2017	----	----	----	22-May-2017	13-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP005) GW70_160517, GW61_160517, GW69_160517, GW47_160517, GW50_160517, F3_170517	GW46_160517, GW65_160517, GW56_160517, GW54_160517, GW45_160517,	16-May-2017	----	----	----	22-May-2017	13-Jun-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517,	GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517	GW56_160517, GW54_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074B: Oxygenated Compounds								
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517,	GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517	GW56_160517, GW54_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓



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	
EP074C: Sulfonated Compounds								
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓	
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517, GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓	
EP074D: Fumigants								
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓	
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517, GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓	
EP074E: Halogenated Aliphatic Compounds								
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓	
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517, GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓	
EP074F: Halogenated Aromatic Compounds								
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓	
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517, GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓	
EP074G: Trihalomethanes								
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓	
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517, GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓	
EP074H: Naphthalene								
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓	
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517, GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓	



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))								
GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	19-May-2017	23-May-2017	✓	22-May-2017	28-Jun-2017	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
GW70_160517, GW61_160517, GW69_160517, GW39_160517, GW44_160517, QC115_160517, GW54_160517, GW45_160517, QC17_160517, QC117_170517,	GW46_160517, GW65_160517, QC113_160517, GW49_160517, GW56_160517, GW47_160517, GW50_160517, QC16_160517, F3_170517, QC118_170517	16-May-2017	19-May-2017	23-May-2017	✓	22-May-2017	28-Jun-2017	✓
Amber TOC Vial - Sulfuric Acid (EP080)								
GW39_160517, GW44_160517	GW49_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC16_160517, F3_170517, QC118_170517	QC17_160517, QC117_170517,	16-May-2017	19-May-2017	30-May-2017	✓	19-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
GW70_160517, GW61_160517, GW69_160517, QC113_160517, GW56_160517, QC116_160517, GW54_160517, GW45_160517	GW46_160517, GW65_160517, QC112_160517, QC114_160517, QC115_160517, GW47_160517, GW50_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓



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 Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
GW70_160517, GW61_160517, GW69_160517, GW39_160517, GW44_160517, QC115_160517, GW54_160517, GW45_160517, QC17_160517, QC117_170517,	GW46_160517, GW65_160517, QC113_160517, GW49_160517, GW56_160517, GW47_160517, GW50_160517, QC16_160517, F3_170517, QC118_170517	16-May-2017	19-May-2017	23-May-2017	✓	22-May-2017	28-Jun-2017	✓
Amber TOC Vial - Sulfuric Acid (EP080)								
GW39_160517, GW44_160517	GW49_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC16_160517, F3_170517, QC118_170517	QC17_160517, QC117_170517,	16-May-2017	19-May-2017	30-May-2017	✓	19-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
GW70_160517, GW61_160517, GW69_160517, QC113_160517, GW56_160517, QC116_160517, GW54_160517, GW45_160517	GW46_160517, GW65_160517, QC112_160517, QC114_160517, QC115_160517, GW47_160517, GW50_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓



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: BTEXN								
Amber TOC Vial - Sulfuric Acid (EP080) GW39_160517, GW44_160517	GW49_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC16_160517, F3_170517, QC118_170517	QC17_160517, QC117_170517,	16-May-2017	19-May-2017	30-May-2017	✓	19-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW70_160517, GW61_160517, GW69_160517, QC113_160517, GW56_160517, QC116_160517, GW54_160517, GW45_160517	GW46_160517, GW65_160517, QC112_160517, QC114_160517, QC115_160517, GW47_160517, GW50_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓



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	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	3	24	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	3	24	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	14	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	3	26	11.54	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	24	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	24	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	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							
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	14	0.00	5.00	*	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	14	7.14	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							
Matrix Spikes (MS) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	26	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	9	11.11	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)
Ammonium as N	EK055G-NH ₄	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH ₃ G. 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)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. 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 SO ₄ DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. 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)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.
<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.

CERTIFICATE OF ANALYSIS

Work Order : EM1706246 Amendment : 2 Client : AECOM Australia Pty Ltd Contact : MS AVERYLL COYNE Address : COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004 Telephone : +61 03 9653 1234 Project : 60537182 Order number : 60537182 3.5 C-O-C number : ---- Sampler : NK/MW/JM Site : Fishermans Bend Quote number : ME/199/16 No. of samples received : 23 No. of samples analysed : 23	Page : 1 of 35 Laboratory : Environmental Division Melbourne Contact : Carol Walsh Address : 4 Westall Rd Springvale VIC Australia 3171 Telephone : +61-3-8549 9608 Date Samples Received : 17-May-2017 13:45 Date Analysis Commenced : 18-May-2017 Issue Date : 02-Jun-2017 17:21
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Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- TDS by method EA-015 for EM1706246 #1,10,16 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- **EP074-WF: Particular samples has LOR raised for Idomethane due to matrix interference.**
- ALS is not NATA accredited for the analysis of ammonium as N.
- Amendment (2/6/17): This report has been amended and re-released to allow the reporting of additional analytical data.
- Amendment (25/02/2017): This report has been amended following changes to the analytical data reported. The quality system is being utilised to resolve this issue. The specific data affected includes EP231X results for sample "GW49_160517".
- 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 iron for #10.
- Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate; and major cations - calcium, magnesium, potassium, sodium, iron and ammonia for #21.
- **EP074-WF: Sample EM1706246-012 has LOR raised for Acetone due to laboratory background.**
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- 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	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.11	7.14	7.44	6.76	7.83	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	416	980	2760	2200	2540	
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	168	296	1660	1330	1160	
Total Alkalinity as CaCO3	----	1	mg/L	168	296	1660	1330	1160	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	47	447	187	<1	<1	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	105	814	233	41	25	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	32	45	839	696	937	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	43	173	95	96	95	
Magnesium	7439-95-4	1	mg/L	9	46	150	123	94	
Sodium	7440-23-5	1	mg/L	41	79	777	517	813	
Potassium	7440-09-7	1	mg/L	4	14	106	79	57	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.07	0.06	0.03	0.04	0.05	
Arsenic	7440-38-2	0.001	mg/L	0.010	0.002	0.004	0.011	0.007	
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	0.004	0.003	0.005	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.022	0.285	0.211	0.216	0.552	
Nickel	7440-02-0	0.001	mg/L	0.004	0.003	0.006	0.012	0.018	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.015	0.025	0.008	0.012	0.008	
Iron	7439-89-6	0.05	mg/L	1.51	3.98	14.8	18.3	4.92	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	14.7	19.9	0.74	11.0	6.80	
Arsenic	7440-38-2	0.001	mg/L	0.030	0.043	0.007	0.068	0.014	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0007	0.0008	0.0103	0.0010	
Chromium	7440-47-3	0.001	mg/L	0.040	0.065	0.010	0.055	0.029	
Copper	7440-50-8	0.001	mg/L	0.007	0.061	0.038	0.184	0.076	
Nickel	7440-02-0	0.001	mg/L	0.023	0.058	0.016	0.077	0.053	
Lead	7439-92-1	0.001	mg/L	0.020	0.027	0.060	0.595	0.210	
Zinc	7440-66-6	0.005	mg/L	0.082	0.208	0.621	1.74	0.839	
Manganese	7439-96-5	0.001	mg/L	0.073	0.402	0.242	0.452	0.688	
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	19.3	40.7	20.3	61.8	21.2	
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.7	0.7	0.2	0.1	0.7	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.34	2.21	80.3	73.6	10.3	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.34	2.20	79.8	73.5	10.1	
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	0.02	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.02	<0.01	<0.01	<0.01	0.02	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	<0.01	<0.01	<0.01	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	<0.01	<0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	5.24	16.5	60.7	46.2	49.6	
Total Cations	----	0.01	meq/L	4.77	16.2	53.6	39.4	49.3	
Ionic Balance	----	0.01	%	4.65	0.85	6.24	7.92	0.31	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	8	9	39	73	51	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
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	----	----	3	----	----	
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	----	----	4	----	----	
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	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	----	----	<2	----	----	
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	----	----	
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	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
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	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	1.4	4.1	<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	4.1	<1.0	
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	<1.0	1.5	<1.0	
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	<1.0	2.0	<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	1.4	11.7	<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	30	<20	30	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	160	460	<50	
C15 - C28 Fraction	----	100	µg/L	<100	280	700	610	540	
C29 - C36 Fraction	----	50	µg/L	<50	<50	70	110	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	280	930	1180	540	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	20	<20	40	<20	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	290	600	110	
>C16 - C34 Fraction	----	100	µg/L	<100	250	590	520	480	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	250	880	1120	590	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	290	600	110	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	11	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	4	<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	16	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	0.03	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	<0.02	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	----	0.02	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	<0.02	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	<0.01	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	<0.02	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	<0.1	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	<0.02	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	0.05	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	<0.02	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	<0.01	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	<0.02	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	<0.02	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	<0.02	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	<0.02	----	----	
Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	----	----	<0.02	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	<0.05	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	<0.02	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	----	----	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	<0.02	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	<0.02	----	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	<0.05	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	<0.05	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	<0.05	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW70_160517	GW46_160517	GW61_160517	GW65_160517	GW69_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-001	EM1706246-002	EM1706246-003	EM1706246-004	EM1706246-005	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	<0.05	----	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	----	0.10	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	0.02	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	0.10	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	----	----	107	----	----	
Toluene-D8	2037-26-5	1	%	----	----	116	----	----	
4-Bromofluorobenzene	460-00-4	1	%	----	----	116	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	33.4	30.4	32.1	37.7	35.2	
2-Chlorophenol-D4	93951-73-6	1	%	83.1	81.2	78.2	89.4	86.3	
2,4,6-Tribromophenol	118-79-6	1	%	61.0	75.7	79.2	95.7	84.4	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	78.1	80.5	73.3	83.2	79.6	
Anthracene-d10	1719-06-8	1	%	80.8	80.3	77.0	85.2	87.6	
4-Terphenyl-d14	1718-51-0	1	%	81.9	81.5	78.6	85.3	87.2	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	97.8	96.9	101	109	96.2	
Toluene-D8	2037-26-5	2	%	102	101	120	122	101	
4-Bromofluorobenzene	460-00-4	2	%	116	117	129	126	118	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	----	70.1	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	----	----	----	7.12	6.93	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	1680	124	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	185	43	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	185	43	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	201	<1	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	----	----	----	248	28	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	----	----	----	776	6	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	----	----	----	104	4	
Magnesium	7439-95-4	1	mg/L	----	----	----	53	5	
Sodium	7440-23-5	1	mg/L	----	----	----	417	4	
Potassium	7440-09-7	1	mg/L	----	----	----	21	2	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.10	0.11	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	0.025	0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	0.003	0.002	
Copper	7440-50-8	0.001	mg/L	----	----	----	0.002	<0.001	
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.049	0.017	
Nickel	7440-02-0	0.001	mg/L	----	----	----	0.004	0.005	
Selenium	7782-49-2	0.01	mg/L	----	----	----	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	----	0.012	0.007	
Iron	7439-89-6	0.05	mg/L	----	----	----	10.2	2.02	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	----	<0.01	----	0.70	11.0	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	0.100	0.010	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	0.006	0.026	
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	0.004	0.004	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	0.008	0.020	
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	0.006	0.008	
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	0.023	0.033	
Manganese	7439-96-5	0.001	mg/L	----	<0.001	----	0.055	0.057	
Selenium	7782-49-2	0.01	mg/L	----	<0.01	----	<0.01	<0.01	
Iron	7439-89-6	0.05	mg/L	----	<0.05	----	20.2	18.9	
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	----	<0.0001	----	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	----	----	----	0.2	0.9	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	1.64	0.22	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	1.64	0.22	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	----	----	----	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	----	----	----	0.03	0.03	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	0.03	0.03	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	0.05	0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	----	----	----	29.8	1.03	
Total Cations	----	0.01	meq/L	----	----	----	----	0.94	
Total Cations	----	0.01	meq/L	----	----	----	28.2	----	
Ionic Balance	----	0.01	%	----	----	----	----	4.28	
Ionic Balance	----	0.01	%	----	----	----	2.66	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	----	----	----	32	7	
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	----	
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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	----	----	----	10	----	
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	----	
1,1,1,2,2-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	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP074F: Halogenated Aromatic Compounds - Continued									
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	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	----	----	----	<1.0	<1.0	
Acenaphthylene	208-96-8	1	µg/L	----	----	----	<1.0	<1.0	
Acenaphthene	83-32-9	1	µg/L	----	----	----	<1.0	<1.0	
Fluorene	86-73-7	1	µg/L	----	----	----	<1.0	<1.0	
Phenanthrene	85-01-8	1	µg/L	----	----	----	<1.0	<1.0	
Anthracene	120-12-7	1	µg/L	----	----	----	<1.0	<1.0	
Fluoranthene	206-44-0	1	µg/L	----	----	----	<1.0	<1.0	
Pyrene	129-00-0	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(a)anthracene	56-55-3	1	µg/L	----	----	----	<1.0	<1.0	
Chrysene	218-01-9	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(b+j)fluoranthene	205-99-2	205-82-3	1	µg/L	----	----	<1.0	<1.0	
Benzo(k)fluoranthene	207-08-9	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	----	----	<0.5	<0.5	
Indeno(1,2,3.cd)pyrene	193-39-5	1	µg/L	----	----	----	<1.0	<1.0	
Dibenz(a,h)anthracene	53-70-3	1	µg/L	----	----	----	<1.0	<1.0	
Benzo(g,h,i)perylene	191-24-2	1	µg/L	----	----	----	<1.0	<1.0	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	----	----	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	----	----	<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	
C15 - C28 Fraction	----	100	µg/L	----	<100	----	<100	<100	
C29 - C36 Fraction	----	50	µg/L	----	<50	----	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	----	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
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	
>C16 - C34 Fraction	----	100	µg/L	----	<100	----	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	<100	<100	
[^] >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	----	<100	<100	
[^] >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	----	<100	<100	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<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	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	----	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	----	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	----	----	----	<0.02	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	----	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	----	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	----	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	----	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	----	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	----	<0.02	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	----	----	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	----	----	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	----	----	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	----	----	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	----	----	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	----	----	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	----	----	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	----	----	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	----	----	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	----	----	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	----	----	<0.05	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	----	----	----	----	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	----	----	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	----	----	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	----	----	<0.02	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	----	----	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	----	----	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	----	----	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC112_160517	QC113_160517	QC114_160517	GW39_160517	GW49_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-006	EM1706246-007	EM1706246-008	EM1706246-009	EM1706246-010	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	----	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	----	----	----	----	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	----	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	----	<0.01	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	1	%	----	----	----	108	----	
Toluene-D8	2037-26-5	1	%	----	----	----	115	----	
4-Bromofluorobenzene	460-00-4	1	%	----	----	----	106	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	----	----	----	34.2	33.0	
2-Chlorophenol-D4	93951-73-6	1	%	----	----	----	81.8	81.4	
2,4,6-Tribromophenol	118-79-6	1	%	----	----	----	75.4	73.6	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	----	----	----	76.7	75.2	
Anthracene-d10	1719-06-8	1	%	----	----	----	79.5	86.8	
4-Terphenyl-d14	1718-51-0	1	%	----	----	----	79.4	88.9	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	96.4	94.9	85.2	108	92.8	
Toluene-D8	2037-26-5	2	%	92.1	87.3	82.9	113	90.7	
4-Bromofluorobenzene	460-00-4	2	%	102	107	101	124	105	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	----	----	----	----	78.5	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.75	6.85	----	----	7.59	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	10100	6130	----	----	9210	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	804	1230	----	----	452	
Total Alkalinity as CaCO3	----	1	mg/L	804	1230	----	----	452	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	996	1150	----	----	1010	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	1600	1700	----	----	1480	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	5510	1580	----	----	5140	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	272	309	----	----	265	
Magnesium	7439-95-4	1	mg/L	493	222	----	----	375	
Sodium	7440-23-5	1	mg/L	2900	1370	----	----	2690	
Potassium	7440-09-7	1	mg/L	98	172	----	----	134	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.03	0.01	----	----	0.04	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.004	----	----	0.006	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.003	0.002	----	----	0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	0.005	----	----	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	0.003	----	----	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.038	0.513	----	----	0.232	
Nickel	7440-02-0	0.001	mg/L	0.119	0.054	----	----	0.044	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.014	0.026	----	----	0.014	
Iron	7439-89-6	0.05	mg/L	1.22	0.39	----	----	1.07	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	3.30	19.6	<0.01	----	6.42	
Arsenic	7440-38-2	0.001	mg/L	0.007	0.046	<0.001	----	0.016	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.013	0.060	<0.001	----	0.017	
Copper	7440-50-8	0.001	mg/L	0.005	0.038	<0.001	----	0.011	
Nickel	7440-02-0	0.001	mg/L	0.147	0.106	<0.001	----	0.056	
Lead	7439-92-1	0.001	mg/L	0.003	0.129	<0.001	----	0.006	
Zinc	7440-66-6	0.005	mg/L	0.106	0.150	<0.005	----	0.028	
Manganese	7439-96-5	0.001	mg/L	0.068	0.681	<0.001	----	0.282	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	<0.01	
Iron	7439-89-6	0.05	mg/L	7.12	34.9	<0.05	----	9.38	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	<0.0001	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.3	0.9	----	----	0.6	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	11.2	2.66	----	----	3.61	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	11.1	2.66	----	----	3.60	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.11	----	----	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.12	102	----	----	0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.12	102	----	----	0.01	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.73	0.01	----	----	0.01	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	192	93.1	----	----	175	
Total Cations	----	0.01	meq/L	183	97.7	----	----	164	
Ionic Balance	----	0.01	%	2.52	2.41	----	----	3.10	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	44	56	----	----	13	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
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	
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	<10	<20	----	----	<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	5	<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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	<3	<1	----	----	<3	
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	75	<1	----	----	4	
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	<1	----	----	<1	
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	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
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	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	----	----	<1.0	
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	----	----	<1.0	
Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	----	----	<1.0	
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	----	----	<1.0	
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	----	----	<1.0	
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	----	----	<1.0	
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	----	----	<1.0	
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	----	----	<1.0	
Benzo(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	----	----	<1.0	
Chrysene	218-01-9	1	µg/L	<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	
Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	----	----	<1.0	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	----	----	<1.0	
Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	----	----	<1.0	
Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	----	----	<1.0	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.6	----	----	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.6	----	----	<0.5	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	70	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	<50	
C15 - C28 Fraction	----	100	µg/L	<100	130	<100	----	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	130	<50	----	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW44_160517	GW56_160517	QC115_160517	QC116_160517	GW47_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-011	EM1706246-012	EM1706246-013	EM1706246-014	EM1706246-015	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	110	<100	----	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	110	<100	----	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	<100	
EP080: BTEXN									
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	%	119	91.8	----	----	105	
Toluene-D8	2037-26-5	1	%	121	88.1	----	----	104	
4-Bromofluorobenzene	460-00-4	1	%	121	89.1	----	----	108	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	37.1	27.9	----	----	36.8	
2-Chlorophenol-D4	93951-73-6	1	%	89.6	63.2	----	----	85.8	
2,4,6-Tribromophenol	118-79-6	1	%	76.8	71.1	----	----	70.5	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	78.1	59.1	----	----	77.4	
Anthracene-d10	1719-06-8	1	%	87.8	78.1	----	----	81.0	
4-Terphenyl-d14	1718-51-0	1	%	87.0	84.0	----	----	82.6	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	114	91.5	86.5	89.6	99.3	
Toluene-D8	2037-26-5	2	%	123	88.9	81.4	85.4	108	
4-Bromofluorobenzene	460-00-4	2	%	129	105	92.1	111	125	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.41	7.44	7.60	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2020	12800	4900	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	726	1220	652	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	726	1220	652	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	135	1340	306	----	----	
ED043: Total Oxidised Sulfur as SO4 2-									
Total Oxidised Sulfur as SO4 2-	----	1	mg/L	221	1970	515	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	502	6510	2560	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	154	429	224	----	----	
Magnesium	7439-95-4	1	mg/L	68	434	100	----	----	
Sodium	7440-23-5	1	mg/L	360	3840	1450	----	----	
Potassium	7440-09-7	1	mg/L	16	136	56	----	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.40	0.08	0.04	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.020	0.010	0.006	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0005	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	0.007	0.004	0.002	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	0.005	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.679	0.983	0.623	----	----	
Nickel	7440-02-0	0.001	mg/L	0.026	0.059	0.057	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	0.010	0.028	0.006	----	----	
Iron	7439-89-6	0.05	mg/L	2.40	11.5	1.13	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	38.5	8.75	11.4	<0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.085	0.024	0.036	<0.001	<0.001	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0009	0.0002	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.130	0.028	0.037	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.032	0.021	0.029	<0.001	<0.001	
Nickel	7440-02-0	0.001	mg/L	0.105	0.086	0.122	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	0.061	0.013	0.076	<0.001	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.121	0.073	0.135	<0.005	<0.005	
Manganese	7439-96-5	0.001	mg/L	0.878	1.13	0.793	<0.001	<0.001	
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	27.8	24.1	19.8	<0.05	<0.05	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	<0.1	1.3	0.9	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	3.18	10.5	7.77	----	----	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	3.18	10.5	7.74	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.04	<0.01	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	4.12	<0.01	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	4.16	<0.01	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.50	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	31.5	236	91.6	----	----	
Total Cations	----	0.01	meq/L	29.3	228	83.9	----	----	
Ionic Balance	----	0.01	%	3.50	1.79	4.39	----	----	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	73	67	27	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
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	----	----	----	
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	<10	<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	1	<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	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
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	<2	<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	----	----	----	
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	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
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	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	<1.0	----	----	
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	<1.0	----	----	
Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	<1.0	----	----	
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	<1.0	----	----	
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	<1.0	----	----	
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	<1.0	----	----	
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	<1.0	----	----	
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	<1.0	----	----	
Chrysene	218-01-9	1	µg/L	<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	----	----	
Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	<1.0	----	----	
Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	<1.0	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	120	130	350	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	120	130	350	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW54_160517	GW50_160517	GW45_160517	QC16_160517	QC17_160517
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1706246-016	EM1706246-017	EM1706246-018	EM1706246-019	EM1706246-020	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	130	130	310	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	130	130	310	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
EP080: BTEXN									
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	%	110	95.8	----	----	----	
Toluene-D8	2037-26-5	1	%	120	88.7	----	----	----	
4-Bromofluorobenzene	460-00-4	1	%	117	94.8	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	30.0	36.6	31.8	----	----	
2-Chlorophenol-D4	93951-73-6	1	%	74.6	87.9	79.2	----	----	
2,4,6-Tribromophenol	118-79-6	1	%	77.5	78.8	71.8	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	75.8	83.0	71.6	----	----	
Anthracene-d10	1719-06-8	1	%	84.7	88.5	74.0	----	----	
4-Terphenyl-d14	1718-51-0	1	%	78.7	81.4	67.9	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	106	93.6	112	90.4	93.0	
Toluene-D8	2037-26-5	2	%	125	89.6	125	79.8	86.2	
4-Bromofluorobenzene	460-00-4	2	%	124	109	128	90.4	94.9	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		F3_170517	QC117_170517	QC118_170517	----	----
Client sampling date / time		16-May-2017 00:00		16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1706246-021	EM1706246-022	EM1706246-023	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.56	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	282	----	----	----	----
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	220	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	220	----	----	----	----
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	13	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	14	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	17	----	----	----	----
Magnesium	7439-95-4	1	mg/L	17	----	----	----	----
Sodium	7440-23-5	1	mg/L	29	----	----	----	----
Potassium	7440-09-7	1	mg/L	14	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.03	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.003	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.640	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.024	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.013	----	----	----	----
Iron	7439-89-6	0.05	mg/L	6.97	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	2.93	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	0.006	<0.001	<0.001	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	F3_170517	QC117_170517	QC118_170517	----	----
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1706246-021	EM1706246-022	EM1706246-023	-----	-----	
				Result	Result	Result	----	----	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	0.015	<0.001	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	0.009	<0.001	<0.001	----	----	
Nickel	7440-02-0	0.001	mg/L	0.041	<0.001	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	0.012	<0.001	<0.001	----	----	
Zinc	7440-66-6	0.005	mg/L	0.161	<0.005	<0.005	----	----	
Manganese	7439-96-5	0.001	mg/L	0.841	<0.001	<0.001	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Iron	7439-89-6	0.05	mg/L	17.2	<0.05	<0.05	----	----	
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	<0.0001	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.5	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	1.78	----	----	----	----	
EK055G-NH4: Ammonium as N by DA									
Ammonium as N	14798-03-9_N	0.01	mg/L	1.78	----	----	----	----	
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	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	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	4.79	----	----	----	----	
Total Cations	----	0.01	meq/L	4.37	----	----	----	----	
Ionic Balance	----	0.01	%	4.65	----	----	----	----	
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L	7	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	F3_170517	QC117_170517	QC118_170517	----	----
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1706246-021	EM1706246-022	EM1706246-023	-----	-----	
				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	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----	
C15 - C28 Fraction	----	100	µg/L	230	<100	<100	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	230	<50	<50	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	230	<100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	230	<100	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
EP080: BTEXN									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	F3_170517	QC117_170517	QC118_170517	----	----
Client sampling date / time				16-May-2017 00:00	16-May-2017 00:00	16-May-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1706246-021	EM1706246-022	EM1706246-023	-----	-----	
				Result	Result	Result	----	----	
EP080: BTEXN - Continued									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	31.1	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	1	%	79.3	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	1	%	74.1	----	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	73.8	----	----	----	----	
Anthracene-d10	1719-06-8	1	%	79.0	----	----	----	----	
4-Terphenyl-d14	1718-51-0	1	%	71.3	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	97.2	93.9	91.1	----	----	
Toluene-D8	2037-26-5	2	%	91.2	89.6	82.9	----	----	
4-Bromofluorobenzene	460-00-4	2	%	96.9	93.9	91.8	----	----	



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
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	130

QUALITY CONTROL REPORT

Work Order	: EM1706246	Page	: 1 of 23
Amendment	: 2		
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 17-May-2017
Order number	: 60537182 3.5	Date Analysis Commenced	: 18-May-2017
C-O-C number	: ----	Issue Date	: 02-Jun-2017
Sampler	: NK/MW/JM		
Site	: Fishermans Bend		
Quote number	: ME/199/16		
No. of samples received	: 23		
No. of samples analysed	: 23		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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: 894514)									
EM1706246-002	GW46_160517	EA005-P: pH Value	----	0.01	pH Unit	7.14	7.17	0.419	0% - 20%
EM1706228-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.57	5.52	0.902	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 894516)									
EM1706255-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.97	6.97	0.00	0% - 20%
EM1706246-017	GW50_160517	EA005-P: pH Value	----	0.01	pH Unit	7.44	7.44	0.00	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 897094)									
EM1706104-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	52	47	8.75	No Limit
EM1706143-009	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	80	78	3.80	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 897096)									
EM1706246-005	GW69_160517	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2540	2620	2.94	0% - 20%
EM1706246-021	F3_170517	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	282	244	14.3	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 894512)									
EM1706224-008	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	98	99	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	98	99	0.00	0% - 20%
EM1706228-005	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	6	6	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	6	6	0.00	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 894517)									
EM1706255-003	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	578	581	0.528	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: 894517) - continued									
EM1706255-003	Anonymous	ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	578	581	0.528	0% - 20%
EM1706246-017	GW50_160517	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	1220	1230	0.946	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	1220	1230	0.946	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 894589)									
EM1706246-001	GW70_160517	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	47	49	4.58	0% - 20%
EM1706246-015	GW47_160517	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1010	1000	0.734	0% - 20%
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 900294)									
EM1705994-021	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	699	663	5.32	0% - 20%
EM1706144-001	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	74	84	12.1	0% - 20%
ED043: Total Oxidised Sulfur as SO4 2- (QC Lot: 900295)									
EM1706246-016	GW54_160517	ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	221	228	2.85	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 894590)									
EM1706246-001	GW70_160517	ED045G: Chloride	16887-00-6	1	mg/L	32	32	0.00	0% - 20%
EM1706246-015	GW47_160517	ED045G: Chloride	16887-00-6	1	mg/L	5140	5150	0.145	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 895407)									
EM1706246-002	GW46_160517	ED093F: Calcium	7440-70-2	1	mg/L	173	173	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	46	46	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	79	79	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	14	14	0.00	0% - 50%
EM1706246-015	GW47_160517	ED093F: Calcium	7440-70-2	1	mg/L	265	268	1.15	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	375	375	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	2690	2660	1.28	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	134	133	0.802	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 895405)									
EM1706226-022	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0006	0.0006	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	<0.002	<0.002	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.002	0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.008	0.008	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.858	0.837	2.47	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.018	0.017	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.011	0.011	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	11.4	11.0	4.04	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	0.07	0.08	0.00	No Limit
		EM1706226-061	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0002	<0.0002
EG020A-F: Arsenic	7440-38-2			0.001	mg/L	0.003	0.003	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: 895405) - continued											
EM1706226-061	Anonymous	EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.002	<0.002	0.00	No Limit		
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.002	<0.002	0.00	No Limit		
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.002	<0.002	0.00	No Limit		
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.002	<0.002	0.00	No Limit		
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.002	<0.002	0.00	No Limit		
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.010	<0.010	0.00	No Limit		
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.02	<0.02	0.00	No Limit		
		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	<0.05	<0.05	0.00	No Limit		
EG020F: Dissolved Metals by ICP-MS (QC Lot: 895408)											
EM1706307-003	Anonymous	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	0.012	0.012	0.00	0% - 50%		
		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	0.246	0.250	1.35	0% - 20%		
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<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	<0.05	<0.05	0.00	No Limit
		EM1706246-016	GW54_160517	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	0.020	0.020	0.00	0% - 20%		
EG020A-F: Chromium	7440-47-3			0.001	mg/L	0.007	0.007	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	0.679	0.677	0.374	0% - 20%		
EG020A-F: Nickel	7440-02-0			0.001	mg/L	0.026	0.026	0.00	0% - 20%		
EG020A-F: Zinc	7440-66-6			0.005	mg/L	0.010	0.011	0.00	No Limit		
EG020A-F: Aluminium	7429-90-5			0.01	mg/L	0.40	0.40	0.00	0% - 20%		
				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	2.40	2.37	1.23	0% - 20%		
EG020T: Total Metals by ICP-MS (QC Lot: 895719)											
EM1706145-001	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: Manganese	7439-96-5	0.001	mg/L	0.024	0.024	0.00	0% - 20%		
				EG020A-T: Nickel	7440-02-0	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: 895719) - continued									
EM1706145-001	Anonymous	EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.022	0.021	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.02	0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EM1706227-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0222	0.0220	0.943	0% - 20%
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.070	0.070	0.00	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.137	0.136	0.00	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.103	0.101	2.07	0% - 20%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	23.6	23.5	0.316	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.170	0.168	1.30	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	59.9	60.1	0.265	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	5.49	5.48	0.294	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	151	151	0.00	0% - 20%		
EG020T: Total Metals by ICP-MS (QC Lot: 895721)									
EM1706246-010	GW49_160517	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	0.010	0.012	17.2	0% - 50%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.026	0.032	17.0	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.005	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.008	0.009	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.057	0.064	12.8	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.020	0.023	13.4	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.033	0.036	8.65	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	11.0	9.49	14.9	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	18.9	21.0	10.6	0% - 20%		
EM1706246-020	QC17_160517	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: Manganese	7439-96-5	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EG035F: Dissolved Mercury by FIMS (QC Lot: 895406)									
EM1706226-022	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0003	0.0002	45.7	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 (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 895406) - continued									
EM1706226-061	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: 895409)									
EM1706246-016	GW54_160517	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: 903145)									
EM1706204-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0010	<0.0010	0.00	No Limit
EM1706246-005	GW69_160517	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 903146)									
EM1706246-019	QC16_160517	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1706358-072	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 894511)									
EM1706222-010	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	0.00	No Limit
EM1706246-002	GW46_160517	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.7	0.7	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 894518)									
EM1706246-017	GW50_160517	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.3	1.4	0.00	0% - 50%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 900216)									
EM1706026-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.00	No Limit
EM1706243-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.10	0.10	0.00	0% - 50%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 900218)									
EM1706246-016	GW54_160517	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	3.18	3.87	19.4	0% - 20%
EM1706312-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	10.2	10.9	6.98	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 894591)									
EM1706246-001	GW70_160517	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1706246-015	GW47_160517	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 900217)									
EM1706026-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	28.2	30.3	7.29	0% - 20%
EM1706243-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	4.99	4.97	0.385	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 900219)									
EM1706246-016	GW54_160517	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.01	55.6	No Limit
EM1706312-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	33.8	33.7	0.274	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 894592)									
EM1706246-001	GW70_160517	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1706246-015	GW47_160517	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	0.01	0.00	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 900494)									
EM1706238-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.00	No Limit
EM1706246-004	GW65_160517	EP005: Total Organic Carbon	----	1	mg/L	73	67	8.95	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 896901)									
EM1706246-017	GW50_160517	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



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: 896901) - continued									
EM1706246-017	GW50_160517	EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	<1	0.00	No Limit
		EP074-WF: meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	<1	0.00	No Limit
		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
EP074B: Oxygenated Compounds (QC Lot: 896901)									
EM1706246-017	GW50_160517	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: 896901)									
EM1706246-017	GW50_160517	EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	<1	0.00	No Limit
EP074D: Fumigants (QC Lot: 896901)									
EM1706246-017	GW50_160517	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: 896901)									
EM1706246-017	GW50_160517	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



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: 896901) - continued									
EM1706246-017	GW50_160517	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: 896901)									
EM1706246-017	GW50_160517	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: 896901)									
EM1706246-017	GW50_160517	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: 896901)									
EM1706246-017	GW50_160517	EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 894498)									
EM1706246-007	QC113_160517	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	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 (%)	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 896900)										
EM1706246-012	GW56_160517	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EM1706246-017	GW50_160517	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 896905)										
EM1706245-038	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EM1706266-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 894498)										
EM1706246-007	QC113_160517	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit	
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 896900)										
EM1706246-012	GW56_160517	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EM1706246-017	GW50_160517	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: 896905)										
EM1706245-038	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EM1706266-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EP080: BTEXN (QC Lot: 896900)										
EM1706246-012	GW56_160517	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	
EM1706246-017	GW50_160517	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
		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: 896905)										
EM1706245-038	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	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	
EM1706266-005	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
		EP080: Benzene	71-43-2	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 (%)		
EP080: BTEXN (QC Lot: 896905) - continued											
EM1706266-005	Anonymous	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		
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 900101)											
EM1706246-003	GW61_160517	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit		
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.02	0.00	No Limit		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.02	<0.02	0.00	No Limit		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
ES1711914-006	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit		
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 900101)											
EM1706246-003	GW61_160517	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.05	0.05	0.00	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit		
		ES1711914-006	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
				EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
				EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	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 (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 900101) - continued									
ES1711914-006	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 900101)									
EM1706246-003	GW61_160517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1711914-006	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 900101)									
EM1706246-003	GW61_160517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1711914-006	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit

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 Work Order : EM1706246 Amendment 2
 Client : AECOM Australia Pty Ltd
 Project : 60537182



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 (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 900101) - continued									
ES1711914-006	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 900101)									
EM1706246-003	GW61_160517	EP231X: Sum of PFAS	----	0.01	µg/L	0.10	0.09	10.5	0% - 50%
ES1711914-006	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	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: 897094)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	102	96	106	
				<10	293 mg/L	98.4	96	106	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 897096)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	98.6	96	106	
				<10	293 mg/L	102	96	106	
ED037P: Alkalinity by PC Titrator (QCLot: 894512)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	91.4	90	110	
ED037P: Alkalinity by PC Titrator (QCLot: 894517)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	99.1	90	110	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 894589)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	110	92	115	
				<1	100 mg/L	106	92	115	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<1	500 mg/L	98.0	85	118	
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900295)									
ED043: Total Oxidised Sulfur as SO4 2-	----	1	mg/L	<1	500 mg/L	92.8	85	118	
ED045G: Chloride by Discrete Analyser (QCLot: 894590)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	109	89	117	
				<1	1000 mg/L	106	92	112	
ED093F: Dissolved Major Cations (QCLot: 895407)									
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	100	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	99.4	89	107	
EG020F: Dissolved Metals by ICP-MS (QCLot: 895405)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	98.9	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	92.1	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	98.6	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.3	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	89.7	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	89.4	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	89.0	87	109	



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	
EG020F: Dissolved Metals by ICP-MS (QCLot: 895405) - continued									
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.7	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	91.4	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.2	94	106	
EG020F: Dissolved Metals by ICP-MS (QCLot: 895408)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	99.5	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	89.1	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	89.6	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.4	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.9	87	109	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	89.6	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	89.9	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	95.1	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.6	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.2	94	106	
EG020T: Total Metals by ICP-MS (QCLot: 895719)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	105	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	105	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.4	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.1	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.4	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.4	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.4	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.9	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.8	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100.0	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	99	110	
EG020T: Total Metals by ICP-MS (QCLot: 895721)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	104	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.7	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.9	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.5	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.4	88	113	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.8	88	112	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.9	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	95.3	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	102	88	112	



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	
EG020T: Total Metals by ICP-MS (QCLot: 895721) - continued									
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	105	99	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 895406)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.7	88	117	
EG035F: Dissolved Mercury by FIMS (QCLot: 895409)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	107	88	117	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 903145)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	92.8	87	113	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 903146)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.5	87	113	
EK040P: Fluoride by PC Titrator (QCLot: 894511)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	92.6	85	112	
EK040P: Fluoride by PC Titrator (QCLot: 894518)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	109	85	112	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 900216)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	95.3	80	115	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 900218)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	97.3	80	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 894591)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	94	107	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 900217)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	107	89	114	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 900219)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	89	114	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 894592)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	108	94	108	
EP005: Total Organic Carbon (TOC) (QCLot: 900494)									
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	93.5	81	109	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 896901)									
EP074-WF: Benzene	71-43-2	1	µg/L	<1	20 µg/L	98.6	81	119	
EP074-WF: Toluene	108-88-3	1	µg/L	<1	20 µg/L	93.7	84	117	
EP074-WF: Ethylbenzene	100-41-4	1	µg/L	<1	20 µg/L	100	83	114	
EP074-WF: meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	40 µg/L	96.1	81	116	
EP074-WF: Styrene	100-42-5	1	µg/L	<1	20 µg/L	93.2	82	118	
EP074-WF: ortho-Xylene	95-47-6	1	µg/L	<1	20 µg/L	96.2	85	115	
EP074-WF: Isopropylbenzene	98-82-8	1	µg/L	<1	20 µg/L	96.4	81	113	



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	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 896901) - continued									
EP074-WF: n-Propylbenzene	103-65-1	1	µg/L	<1	20 µg/L	92.1	76	111	
EP074-WF: 1,3,5-Trimethylbenzene	108-67-8	1	µg/L	<1	20 µg/L	96.7	79	109	
EP074-WF: sec-Butylbenzene	135-98-8	1	µg/L	<1	20 µg/L	97.9	77	111	
EP074-WF: 1,2,4-Trimethylbenzene	95-63-6	1	µg/L	<1	20 µg/L	103	79	108	
EP074-WF: tert-Butylbenzene	98-06-6	1	µg/L	<1	20 µg/L	101	80	110	
EP074-WF: p-Isopropyltoluene	99-87-6	1	µg/L	<1	20 µg/L	95.1	75	111	
EP074-WF: n-Butylbenzene	104-51-8	1	µg/L	<1	20 µg/L	88.4	68	111	
EP074B: Oxygenated Compounds (QCLot: 896901)									
EP074-WF: 2-Propanone (Acetone)	67-64-1	10	µg/L	<10	200 µg/L	87.9	69	147	
EP074-WF: Vinyl Acetate	108-05-4	10	µg/L	<10	200 µg/L	85.7	77	124	
EP074-WF: 2-Butanone (MEK)	78-93-3	10	µg/L	<10	200 µg/L	84.5	71	131	
EP074-WF: 4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L	<10	200 µg/L	89.0	73	128	
EP074-WF: 2-Hexanone (MBK)	591-78-6	10	µg/L	<10	200 µg/L	85.9	75	129	
EP074C: Sulfonated Compounds (QCLot: 896901)									
EP074-WF: Carbon disulfide	75-15-0	1	µg/L	<1	20 µg/L	66.9	64	119	
EP074D: Fumigants (QCLot: 896901)									
EP074-WF: 2,2-Dichloropropane	594-20-7	1	µg/L	<1	20 µg/L	92.0	74	117	
EP074-WF: 1,2-Dichloropropane	78-87-5	1	µg/L	<1	20 µg/L	95.1	83	118	
EP074-WF: cis-1,3-Dichloropropylene	10061-01-5	2	µg/L	<2	20 µg/L	88.8	74	109	
EP074-WF: trans-1,3-Dichloropropylene	10061-02-6	2	µg/L	<2	20 µg/L	83.6	70	109	
EP074-WF: 1,2-Dibromoethane (EDB)	106-93-4	1	µg/L	<1	20 µg/L	83.5	81	116	
EP074E: Halogenated Aliphatic Compounds (QCLot: 896901)									
EP074-WF: Dichlorodifluoromethane	75-71-8	10	µg/L	<10	200 µg/L	68.3	61	137	
EP074-WF: Chloromethane	74-87-3	10	µg/L	<10	200 µg/L	70.7	66	137	
EP074-WF: Vinyl chloride	75-01-4	0.2	µg/L	<0.2	200 µg/L	75.7	67	135	
EP074-WF: Bromomethane	74-83-9	10	µg/L	<10	200 µg/L	75.0	52	128	
EP074-WF: Chloroethane	75-00-3	10	µg/L	<10	200 µg/L	87.3	76	125	
EP074-WF: Trichlorofluoromethane	75-69-4	10	µg/L	<10	200 µg/L	88.9	74	123	
EP074-WF: 1,1-Dichloroethene	75-35-4	1	µg/L	<1	20 µg/L	89.3	75	120	
EP074-WF: Iodomethane	74-88-4	1	µg/L	<1	20 µg/L	84.2	37	120	
EP074-WF: Methylene chloride	75-09-2	2	µg/L	<2	20 µg/L	119	72	159	
EP074-WF: trans-1,2-Dichloroethene	156-60-5	1	µg/L	<1	20 µg/L	88.6	78	117	
EP074-WF: 1,1-Dichloroethane	75-34-3	1	µg/L	<1	20 µg/L	96.0	81	118	
EP074-WF: cis-1,2-Dichloroethene	156-59-2	1	µg/L	<1	20 µg/L	99.7	83	118	
EP074-WF: 1,1,1-Trichloroethane	71-55-6	1	µg/L	<1	20 µg/L	95.5	76	115	
EP074-WF: 1,1-Dichloropropylene	563-58-6	1	µg/L	<1	20 µg/L	85.9	75	117	
EP074-WF: Carbon Tetrachloride	56-23-5	1	µg/L	<1	20 µg/L	89.8	72	111	
EP074-WF: 1,2-Dichloroethane	107-06-2	1	µg/L	<1	20 µg/L	91.0	81	120	



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
EP074E: Halogenated Aliphatic Compounds (QCLot: 896901) - continued								
EP074-WF: Trichloroethene	79-01-6	1	µg/L	<1	20 µg/L	96.1	78	116
EP074-WF: Dibromomethane	74-95-3	1	µg/L	<1	20 µg/L	89.8	79	116
EP074-WF: 1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	20 µg/L	95.1	85	119
EP074-WF: 1.3-Dichloropropane	142-28-9	1	µg/L	<1	20 µg/L	93.3	85	119
EP074-WF: Tetrachloroethene	127-18-4	1	µg/L	<1	20 µg/L	87.0	76	120
EP074-WF: 1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	20 µg/L	92.6	78	110
EP074-WF: trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	20 µg/L	70.1	64	118
EP074-WF: cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	20 µg/L	64.5	51	113
EP074-WF: 1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	20 µg/L	90.8	85	121
EP074-WF: 1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	20 µg/L	86.6	84	118
EP074-WF: Pentachloroethane	76-01-7	1	µg/L	<1	20 µg/L	99.4	64	109
EP074-WF: 1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	20 µg/L	81.1	65	115
EP074-WF: Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	20 µg/L	104	70	121
EP074F: Halogenated Aromatic Compounds (QCLot: 896901)								
EP074-WF: Chlorobenzene	108-90-7	1	µg/L	<1	20 µg/L	96.0	85	115
EP074-WF: Bromobenzene	108-86-1	1	µg/L	<1	20 µg/L	93.6	82	116
EP074-WF: 2-Chlorotoluene	95-49-8	1	µg/L	<1	20 µg/L	101	81	112
EP074-WF: 4-Chlorotoluene	106-43-4	1	µg/L	<1	20 µg/L	97.3	80	110
EP074-WF: 1.3-Dichlorobenzene	541-73-1	1	µg/L	<1	20 µg/L	99.3	80	110
EP074-WF: 1.4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	20 µg/L	101	80	112
EP074-WF: 1.2-Dichlorobenzene	95-50-1	1	µg/L	<1	20 µg/L	94.4	84	111
EP074-WF: 1.2.4-Trichlorobenzene	120-82-1	1	µg/L	<1	20 µg/L	100	70	114
EP074-WF: 1.2.3-Trichlorobenzene	87-61-6	1	µg/L	<1	20 µg/L	99.3	78	116
EP074G: Trihalomethanes (QCLot: 896901)								
EP074-WF: Chloroform	67-66-3	1	µg/L	<1	20 µg/L	99.8	82	118
EP074-WF: Bromodichloromethane	75-27-4	1	µg/L	<1	20 µg/L	93.3	75	112
EP074-WF: Dibromochloromethane	124-48-1	1	µg/L	<1	20 µg/L	85.6	73	108
EP074-WF: Bromoform	75-25-2	1	µg/L	<1	20 µg/L	78.6	68	107
EP074H: Naphthalene (QCLot: 896901)								
EP074-WF: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	106	80	116
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 894497)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	87.6	39	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	92.7	40	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	95.7	47	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	89.0	51	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	95.0	53	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	101	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	95.0	59	123



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: 894497) - continued									
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	96.1	58	123	
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	90.3	52	126	
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	90.3	55	123	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	90.7	52	131	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	84.9	57	126	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	88.2	56	126	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	88.3	53	123	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	87.9	53	125	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	88.1	53	125	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 894498)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	108	53	123	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	117	57	133	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	102	55	141	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 896900)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	95.9	67	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 896905)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	90.4	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 894498)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	112	54	122	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	106	56	132	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	111	51	137	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 896900)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	92.5	65	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 896905)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	89.5	65	125	
EP080: BTEXN (QCLot: 896900)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	103	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	101	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	102	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	100	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	100.0	78	128	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	125	71	129	
EP080: BTEXN (QCLot: 896905)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	97.4	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.0	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	94.3	72	124	



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	
EP080: BTEXN (QCLot: 896905) - continued									
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	95.3	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	101	78	128	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	109	71	129	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 900101)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	91.6	70	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	107	70	130	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	107	70	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	110	70	130	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	87.0	70	130	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	106	70	130	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 900101)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	107	70	130	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	82.6	70	130	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	104	70	130	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	112	70	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	118	70	130	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	86.2	70	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	92.4	70	130	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	103	70	130	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	93.8	70	130	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	101	70	130	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	106	70	124	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 900101)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	80.0	70	130	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	109	70	130	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	122	70	129	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.05	µg/L	<0.05	1.25 µg/L	96.1	70	129	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	101	70	126	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	80.4	70	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	90.6	70	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 900101)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	105	70	130	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	276119-97-2	0.05	µg/L	<0.05	0.5 µg/L	78.0	70	130	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	97.4	70	130	



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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 900101) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	87.4	70	130

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 894589)							
EM1706246-002	GW46_160517	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900294)							
EM1705994-023	Anonymous	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	120	70	130
ED043: Total Oxidised Sulfur as SO4 2- (QCLot: 900295)							
EM1706246-017	GW50_160517	ED043: Total Oxidised Sulfur as SO4 2-	----	500 mg/L	88.6	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 894590)							
EM1706246-002	GW46_160517	ED045G: Chloride	16887-00-6	400 mg/L	98.4	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 895405)							
EM1706226-022	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	95.3	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	101	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	81.1	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	86.6	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	84.6	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	# Not Determined	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	89.6	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	83.5	75	131
EG020F: Dissolved Metals by ICP-MS (QCLot: 895408)							
EM1706246-016	GW54_160517	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	99.6	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	99.2	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	94.6	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	94.2	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	94.0	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	91.3	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	94.3	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	94.3	75	131



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%) Low High
EG020T: Total Metals by ICP-MS (QCLot: 895719)							
EM1706145-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	96.1	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	92.9	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	90.4	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	90.9	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	102	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	91.9	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	93.5	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	96.1	74	116
EG020T: Total Metals by ICP-MS (QCLot: 895721)							
EM1706246-010	GW49_160517	EG020A-T: Arsenic	7440-38-2	1 mg/L	97.4	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	93.3	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	91.0	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	95.4	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	104	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	93.0	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	97.1	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	99.7	74	116
EG035F: Dissolved Mercury by FIMS (QCLot: 895406)							
EM1706226-023	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	82.2	70	120
EG035F: Dissolved Mercury by FIMS (QCLot: 895409)							
EM1706246-017	GW50_160517	EG035F: Mercury	7439-97-6	0.01 mg/L	72.6	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 903145)							
EM1706204-002	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	88.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 903146)							
EM1706246-020	QC17_160517	EG035T: Mercury	7439-97-6	0.01 mg/L	96.1	70	130
EK040P: Fluoride by PC Titrator (QCLot: 894511)							
EM1706222-005	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	93.0	70	130
EK040P: Fluoride by PC Titrator (QCLot: 894518)							
EM1706246-018	GW45_160517	EK040P: Fluoride	16984-48-8	5 mg/L	106	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 900216)							
EM1706026-002	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	87.4	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 900218)							
EM1706246-017	GW50_160517	EK055G: Ammonia as N	7664-41-7	1 mg/L	# Not Determined	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 894591)							
EM1706246-002	GW46_160517	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	93.6	80	114



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
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 900217)							
EM1706026-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	123	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 900219)							
EM1706246-017	GW50_160517	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 894592)							
EM1706246-002	GW46_160517	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	96.2	79	123
EP005: Total Organic Carbon (TOC) (QCLot: 900494)							
EM1706238-002	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	91.5	80	114
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 896901)							
EM1706246-009	GW39_160517	EP074-WF: Benzene	71-43-2	20 µg/L	127	76	128
		EP074-WF: Toluene	108-88-3	20 µg/L	106	72	132
EP074E: Halogenated Aliphatic Compounds (QCLot: 896901)							
EM1706246-009	GW39_160517	EP074-WF: 1,1-Dichloroethene	75-35-4	20 µg/L	# 119	63	129
		EP074-WF: Trichloroethene	79-01-6	20 µg/L	107	64	126
EP074F: Halogenated Aromatic Compounds (QCLot: 896901)							
EM1706246-009	GW39_160517	EP074-WF: Chlorobenzene	108-90-7	20 µg/L	107	81	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 896900)							
EM1706246-009	GW39_160517	EP080: C6 - C9 Fraction	----	280 µg/L	113	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 896905)							
EM1706266-003	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	59.5	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 896900)							
EM1706246-009	GW39_160517	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	110	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 896905)							
EM1706266-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	59.8	44	122
EP080: BTEXN (QCLot: 896900)							
EM1706246-009	GW39_160517	EP080: Benzene	71-43-2	20 µg/L	120	68	130
		EP080: Toluene	108-88-3	20 µg/L	119	72	132
EP080: BTEXN (QCLot: 896905)							
EM1706266-003	Anonymous	EP080: Benzene	71-43-2	20 µg/L	78.2	68	130
		EP080: Toluene	108-88-3	20 µg/L	76.4	72	132
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 900101)							
EM1706246-003	GW61_160517	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	103	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	122	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	81.6	50	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 900101) - continued							
EM1706246-003	GW61_160517	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	124	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	122	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	118	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 900101)							
EM1706246-003	GW61_160517	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	110	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	127	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	95.0	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	91.6	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	126	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	111	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	107	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	106	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	68.4	50	130
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.5 µg/L	110	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	76.6	50	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 900101)							
EM1706246-003	GW61_160517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	93.4	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	117	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	96.1	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	1.25 µg/L	103	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	76.5	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	103	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	117	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 900101)							
EM1706246-003	GW61_160517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	109	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	80.2	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	55.2	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	119	50	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1706246	Page	: 1 of 17
Amendment	: 2		
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 17-May-2017
Site	: Fishermans Bend	Issue Date	: 02-Jun-2017
Sampler	: NK/MW/JM	No. of samples received	: 23
Order number	: 60537182 3.5	No. of samples analysed	: 23

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	EM1706246--002	GW46_160517	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG020F: Dissolved Metals by ICP-MS	EM1706226--022	Anonymous	Manganese	7439-96-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK055G: Ammonia as N by Discrete Analyser	EM1706246--017	GW50_160517	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EM1706246--017	GW50_160517	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP074E: Halogenated Aliphatic Compounds	EM1706246--009	GW39_160517	1.1-Dichloroethene	75-35-4	119 %	63-129%	Recovery greater than upper control limit

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	----	----	----	18-May-2017	16-May-2017	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	14	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatle Fraction	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	14	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatle Fraction	0	20	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) GW70_160517, GW46_160517, GW61_160517, GW65_160517, GW69_160517, GW39_160517, GW49_160517, GW44_160517, GW56_160517, GW47_160517, GW54_160517, GW50_160517, GW45_160517, F3_170517	16-May-2017	---	---	---	18-May-2017	16-May-2017	✖
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) GW70_160517, GW46_160517, GW61_160517, GW65_160517, GW69_160517, GW39_160517, GW49_160517, GW44_160517, GW56_160517, GW47_160517, GW54_160517, GW50_160517, GW45_160517, F3_170517	16-May-2017	---	---	---	19-May-2017	23-May-2017	✔
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) GW70_160517, GW46_160517, GW61_160517, GW65_160517, GW69_160517, GW39_160517, GW49_160517, GW44_160517, GW56_160517, GW47_160517, GW54_160517, GW50_160517, GW45_160517, F3_170517	16-May-2017	---	---	---	18-May-2017	30-May-2017	✔



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) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	19-May-2017	13-Jun-2017	✓
ED043: Total Oxidised Sulfur as SO4 2-								
Clear Plastic Bottle - Natural (ED043) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	22-May-2017	13-Jun-2017	✓	22-May-2017	13-Jun-2017	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	19-May-2017	13-Jun-2017	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	23-May-2017	13-Jun-2017	✓



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) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	18-May-2017	12-Nov-2017	✓
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW47_160517, GW50_160517, QC16_160517, F3_170517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, QC115_160517, GW54_160517, GW45_160517, QC17_160517, QC117_170517	16-May-2017	19-May-2017	12-Nov-2017	✓	19-May-2017	12-Nov-2017	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) QC113_160517,	QC118_170517	16-May-2017	19-May-2017	12-Nov-2017	✓	19-May-2017	12-Nov-2017	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	19-May-2017	13-Jun-2017	✓



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	
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW47_160517, GW50_160517, QC16_160517, F3_170517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, QC115_160517, GW54_160517, GW45_160517, QC17_160517, QC117_170517	16-May-2017	----	----	----	24-May-2017	13-Jun-2017	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) QC113_160517,	QC118_170517	16-May-2017	----	----	----	24-May-2017	13-Jun-2017	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	18-May-2017	13-Jun-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	23-May-2017	13-Jun-2017	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	18-May-2017	18-May-2017	✓



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	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	22-May-2017	13-Jun-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	----	----	----	18-May-2017	18-May-2017	✓
EP005: Total Organic Carbon (TOC)								
Amber TOC Vial - Sulfuric Acid (EP005) GW39_160517, GW44_160517	GW49_160517,	16-May-2017	----	----	----	22-May-2017	13-Jun-2017	✓
Amber VOC Vial - Sulfuric Acid (EP005) GW70_160517, GW61_160517, GW69_160517, GW47_160517, GW50_160517, F3_170517	GW46_160517, GW65_160517, GW56_160517, GW54_160517, GW45_160517,	16-May-2017	----	----	----	22-May-2017	13-Jun-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517,	GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517	GW56_160517, GW54_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074B: Oxygenated Compounds								
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517,	GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517	GW56_160517, GW54_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓



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
EP074C: Sulfonated Compounds							
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517, GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074D: Fumigants							
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517, GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074E: Halogenated Aliphatic Compounds							
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517, GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074F: Halogenated Aromatic Compounds							
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517, GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074G: Trihalomethanes							
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517, GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP074H: Naphthalene							
Amber TOC Vial - Sulfuric Acid (EP074-WF) GW39_160517, GW44_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP074-WF) GW61_160517, GW47_160517, GW50_160517, GW56_160517, GW54_160517	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓



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))								
GW70_160517, GW61_160517, GW69_160517, GW49_160517, GW56_160517, GW54_160517, GW45_160517,	GW46_160517, GW65_160517, GW39_160517, GW44_160517, GW47_160517, GW50_160517, F3_170517	16-May-2017	19-May-2017	23-May-2017	✓	22-May-2017	28-Jun-2017	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
GW70_160517, GW61_160517, GW69_160517, GW39_160517, GW44_160517, QC115_160517, GW54_160517, GW45_160517, QC17_160517, QC117_170517,	GW46_160517, GW65_160517, QC113_160517, GW49_160517, GW56_160517, GW47_160517, GW50_160517, QC16_160517, F3_170517, QC118_170517	16-May-2017	19-May-2017	23-May-2017	✓	22-May-2017	28-Jun-2017	✓
Amber TOC Vial - Sulfuric Acid (EP080)								
GW39_160517, GW44_160517	GW49_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC16_160517, F3_170517, QC118_170517	QC17_160517, QC117_170517,	16-May-2017	19-May-2017	30-May-2017	✓	19-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
GW70_160517, GW61_160517, GW69_160517, QC113_160517, GW56_160517, QC116_160517, GW54_160517, GW45_160517	GW46_160517, GW65_160517, QC112_160517, QC114_160517, QC115_160517, GW47_160517, GW50_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓



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 Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
GW70_160517, GW61_160517, GW69_160517, GW39_160517, GW44_160517, QC115_160517, GW54_160517, GW45_160517, QC17_160517, QC117_170517,	GW46_160517, GW65_160517, QC113_160517, GW49_160517, GW56_160517, GW47_160517, GW50_160517, QC16_160517, F3_170517, QC118_170517	16-May-2017	19-May-2017	23-May-2017	✓	22-May-2017	28-Jun-2017	✓
Amber TOC Vial - Sulfuric Acid (EP080)								
GW39_160517, GW44_160517	GW49_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC16_160517, F3_170517, QC118_170517	QC17_160517, QC117_170517,	16-May-2017	19-May-2017	30-May-2017	✓	19-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
GW70_160517, GW61_160517, GW69_160517, QC113_160517, GW56_160517, QC116_160517, GW54_160517, GW45_160517	GW46_160517, GW65_160517, QC112_160517, QC114_160517, QC115_160517, GW47_160517, GW50_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓



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: BTEXN								
Amber TOC Vial - Sulfuric Acid (EP080) GW39_160517, GW44_160517	GW49_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC16_160517, F3_170517, QC118_170517	QC17_160517, QC117_170517,	16-May-2017	19-May-2017	30-May-2017	✓	19-May-2017	30-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) GW70_160517, GW61_160517, GW69_160517, QC113_160517, GW56_160517, QC116_160517, GW54_160517, GW45_160517	GW46_160517, GW65_160517, QC112_160517, QC114_160517, QC115_160517, GW47_160517, GW50_160517,	16-May-2017	22-May-2017	30-May-2017	✓	23-May-2017	30-May-2017	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) GW61_160517,	GW49_160517	16-May-2017	----	----	----	22-May-2017	12-Nov-2017	✓



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	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	3	24	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	3	24	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	14	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	3	26	11.54	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	24	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	24	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	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							
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	14	0.00	5.00	*	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	14	7.14	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	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Matrix Spikes (MS) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Oxidised Sulfur as SO4 2-	ED043	2	26	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	9	11.11	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)
Ammonium as N	EK055G-NH ₄	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH ₃ G. 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)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. 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 SO ₄ DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. 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)



<i>Analytical Methods</i>			
	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.
<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.



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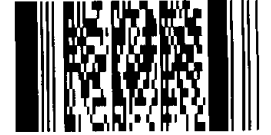
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NOWRA 4/13 Geary Place North Nowra NSW 2541
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PERTH 10 Hod Way Malaga WA 6090
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Environmental Division
Melbourne

Work Order Reference
EM1706246



Telephone : + 61-3-8549 9600

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY Custody Seal Fee / Price / Other Random Sample Other comment:																								
OFFICE: Melbourne		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) <input type="checkbox"/> Non Standard or urgent TAT (List due date):																										
PROJECT:		ALS QUOTE NO.:		<table border="1"> <tr> <th colspan="8">COC SEQUENCE NUMBER (Circle)</th> </tr> <tr> <td>COC:</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>OF:</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> </table>	COC SEQUENCE NUMBER (Circle)								COC:	1	2	3	4	5	6	7	OF:	1	2	3	4	5	6	7
COC SEQUENCE NUMBER (Circle)																												
COC:	1	2	3	4	5	6	7																					
OF:	1	2	3	4	5	6	7																					
ORDER NUMBER: 60537182		PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502																								
SAMPLER: NK/MW/JM		SAMPLER MOBILE:		RELINQUISHED BY:																								
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY:																								
Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com		DATE/TIME: 16/5/17 9:00 PM		RECEIVED BY: Lansid																								
Email Invoice to: Averyll.Coyne@aceom.com		DATE/TIME:		RECEIVED BY: 13:45 on 17/5																								

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS			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		
	MATRIX: SOLID(S) WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below)	(refer to)	TOTAL CONTAINERS	pH, TDS, TOC	TRH (C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cu, Hg, Ni, Pb, PO4, SO4, F and Mn)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10 BTEXN	pH temperature
	GW70-160517	16/5/17	W	Various		10	X	X	X	X	X	X	X		X	X		6.99 17.10
	GW46-160517	"	W	"		"	X	X	X	X	X	X	X		X	X		6.76 20.40
	GW61-160517	"	W	"		12	X	X	X	X	X	X	X	X	X	X		7.18 20.30
	GW65-160517	"	W	"		10	X	X	X	X	X	X	X		X	X		6.60 20.60
	GW69-160517	"	W	"		10	X	X	X	X	X	X	X		X	X		7.60 19.20
	QC112-160517	"	"	"		12											X	
	QC113-160517	"	"	"		4		X				X				X		Blank
	QC114-160517	"	"	"		1											X	
	GW39-160517	"	"	Various		10	X	X	X	X	X	X	X		X	X		6.59 16.90
	GW49-160517	"	"	"		12	X	X	X	X	X	X	X	X	X	X		6.58 16.00
	GW44-160517	"	"	"		10	X	X	X	X	X	X	X		X	X		7.18 16.40
	GW54-160517	"	"	"		10	X	X	X	X	X	X	X		X	X		6.36 19.60
TOTAL																		

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 Glass;
 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:
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WOLLONGONG 99 Kenny Street Wollongong NSW 2590
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CL AECOM Australia Pty Ltd

OFFICE: Melbourne

PROJECT:

ORDER NUMBER: 60537182

PROJECT MANAGER: Averyll Coyne

CONTACT PH: 0499 252 502

SAMPLER: NK/MW/JM

SAMPLER MOBILE:

COC emailed to ALS? (YES / NO)

EDD FORMAT (or default):

Email Reports to: Averyll.coyne@Aecom.com navjot.kaur@Aecom.com

Email Invoice to: Averyll.Coyne@aceom.com

TURNAROUND REQUIREMENTS :

Standard TAT (List due date):

(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

Non Standard or urgent TAT (List due date):

COC SEQUENCE NUMBER (Circle)

COC:	1	2	3	4	5	6	7
OF:	1	2	3	4	5	6	7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact:	Yes	No	N/A
Freezer frozen/ice broken present upon receipt:	Yes	No	N/A
Random Sample Temperature on Receipt:	C		
Other comment:			

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE/TIME:

DATE/TIME:

DATE/TIME:

DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS			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 codes below (refer to)	TOTAL CONTAINERS	pH, TDS, TOC	TRH(C6-C40)	PAH	Nitrogen Oxides/Sulphur oxides	VOC (ALS EP074-WF)	BTEXN	Ionic Chemistry (As, Cd, Cr, Ni, Pb, Se, Zn, Hg, Cu, Fe, Mn, Mo, Ni, P, S, V, W, Zn, and Mn)	PFAS - 28 analytes	Dissolved Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	Total Metals (As, Cd, Total Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg)	TRH C6-C10 BTEXN	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
	13	QC115-160517	16/5/17	W		4		X				X				X			pH temp
	14	QC116-160517	"	"		1											X		
	15	GW47-160517	4	"		10	X	X	X	X	X	X	X		X	X			6.98 15.9
	16	GW54-160517	4	"		10	X	X	X	X	X	X	X		X	X			6.14 18.0
	17	GW50-160517	4	"		10	X	X	X	X	X	X	X		X	X			6.82 18.4
	18	GW45-160517	4	"		10	X	X	X	X	X	X	X		X	X			7.0 18.4
	19	QC16-160517	4	"		4		X				X				X			
	20	QC17-160517	4	"		4		X				X				X			
	21	F3-170517	17/05/17	"		10	X	X	X	X	X	X	X		X	X			6.32 19.7
	22	QC117	17/5/17	W		4		X				X				X			
	23	QC118-17/5/17	17/05/17	W		4		X				X				X			
	23	QC117 17/5/17	17/5/17																
TOTAL																			

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 Sulphuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulphuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solids; B = Unpreserved Bag.

CERTIFICATE OF ANALYSIS

Work Order	: EM1707203	Page	: 1 of 5
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 10-May-2017 09:20
Order number	: 60537182/3.5	Date Analysis Commenced	: 11-May-2017
C-O-C number	: ----	Issue Date	: 08-Jun-2017 13:21
Sampler	: ----		
Site	: ----		
Quote number	: ME/199/16		
No. of samples received	: 6		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Nancy Wang	Senior Semivolatile Instrument 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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1705809.
- 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	GW43_9/5/17	GW57_9/5/17	GW67_9/5/17	GW80_8/5/17	GW81_8/5/17
Client sampling date / time				09-May-2017 00:00	09-May-2017 00:00	09-May-2017 00:00	08-May-2017 00:00	08-May-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1707203-001	EM1707203-002	EM1707203-003	EM1707203-004	EM1707203-005	
				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	4.0	
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	1.5	
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	<1.0	<1.0	19.9	
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	12.4	
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	169	
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	106	
Benzo(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	64.4	
Chrysene	218-01-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	44.5	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	67.2	
Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	22.7	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	34.1	
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	<1.0	<1.0	16.1	
Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	4.2	
Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	<1.0	<1.0	12.3	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	578	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	55.9	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%	30.6	31.9	31.4	27.7	22.3	
2-Chlorophenol-D4	93951-73-6	1	%	77.6	83.4	88.3	76.6	51.5	
2,4,6-Tribromophenol	118-79-6	1	%	79.6	86.4	105	84.6	102	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%	72.6	83.9	85.7	74.7	76.6	
Anthracene-d10	1719-06-8	1	%	86.4	95.8	98.5	91.8	101	
4-Terphenyl-d14	1718-51-0	1	%	95.1	106	104	97.2	106	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID				
				GW82_9/5/17	----	----	----	----
Client sampling date / time				09-May-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1707203-006	-----	-----	-----	-----
				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	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1	%	34.2	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1	%	99.4	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1	%	102	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1	%	99.2	----	----	----	----
Anthracene-d10	1719-06-8	1	%	98.6	----	----	----	----
4-Terphenyl-d14	1718-51-0	1	%	106	----	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
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

QUALITY CONTROL REPORT

Work Order	: EM1707203	Page	: 1 of 3
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 10-May-2017
Order number	: 60537182/3.5	Date Analysis Commenced	: 11-May-2017
C-O-C number	: ----	Issue Date	: 08-Jun-2017
Sampler	: ----		
Site	: ----		
Quote number	: ME/199/16		
No. of samples received	: 6		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Nancy Wang	Senior Semivolatile Instrument 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%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



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 (%)		
						LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 928036)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	84.3	39	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	84.6	40	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	85.3	47	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	86.9	51	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	93.0	53	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	67.2	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	96.4	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	97.1	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	91.9	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	94.6	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	94.9	52	131
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	91.1	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	87.5	56	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	93.6	53	123
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	93.0	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	90.9	53	125

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.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1707203	Page	: 1 of 4
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 10-May-2017
Site	: ----	Issue Date	: 08-Jun-2017
Sampler	: ----	No. of samples received	: 6
Order number	: 60537182/3.5	No. of samples analysed	: 6

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.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

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



Outliers : Frequency of Quality Control Samples

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	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	6	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	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) GW80_8/5/17,	GW81_8/5/17	08-May-2017	11-May-2017	15-May-2017	✔	07-Jun-2017	20-Jun-2017	✔
Amber Glass Bottle - Unpreserved (EP075(SIM)) GW43_9/5/17, GW67_9/5/17,	GW57_9/5/17, GW82_9/5/17	09-May-2017	11-May-2017	16-May-2017	✔	07-Jun-2017	20-Jun-2017	✔



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	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	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.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)

<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1707203

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 2
Order number	: 60537182/3.5	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 10-May-2017 09:20	Issue Date	: 05-Jun-2017
Client Requested Due Date	: 13-Jun-2017	Scheduled Reporting Date	: 13-Jun-2017

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 6 / 6

General Comments

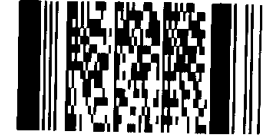
- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **This is a rebatch of EM1705809.**

Rebatch

Client / Client code: AECOMAU
 Project: 60537182 3.5
 Project Manager: Averyll Coyne
 Date /time sample rec: Wednesday, 10 May 2017
 Date/time Instructions rec: 5/06/2017 11:18
 Due date: Standard
 Due date surcharge:

CS Contact: C.Walsh
 Additional Information:
 Use previous extract

Environmental Division
 Melbourne
 Work Order Reference
EM1707203



Telephone : + 61-3-8549 9600

New Lab ID	Sample information						Analysis										Shortest Holding time expiry			
	Client ID	Sampling Date / Time	Previous Work Order Reference	Previous ALS ID	Tray Number(s)	Container	Number of Containers	Standard					Leach							
								PAH												
1	GW43_9/5/17	9/05/2017 0:00	EM1705809	4		Extract		X										15-Jun-17		
2	GW57_9/5/17	9/05/2017 0:00		6				X												15-Jun-17
3	GW67_9/5/17	9/05/2017 0:00		3				X												15-Jun-17
4	GW80_8/5/17	8/05/2017 0:00		2				X												15-Jun-17
5	GW818/5/17	8/05/2017 0:00		1				X												15-Jun-17
6	GW82_9/5/17	9/05/2017 0:00		5				X												15-Jun-17
TOTAL							0													

2-4 Westall Rd
Springvale Vic 3171
Australia

From: Coyne, Averyll [<mailto:Averyll.Coyne@aecom.com>]
Sent: Monday, 5 June 2017 11:18 AM
To: Peter Ravlic <peter.ravlic@alsglobal.com>
Subject: RE: Metals, Nutrients and Ionic Chemistry

Thanks Peter,

Can you also please organise for samples GW43, GW57, GW67, GW80, GW81 and GW82 to undergo PAH analysis? I have attached the original COC for your reference.

Kind Regards
Averyll

Averyll Coyne
Principal Environmental Scientist
D +61 3 9653 8072 M +61 499 252 502
Averyll.Coyne@aecom.com

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From: Peter Ravlic [<mailto:peter.ravlic@alsglobal.com>]
Sent: Friday, 2 June 2017 5:22 PM
To: Coyne, Averyll
Subject: RE: Metals, Nutrients and Ionic Chemistry

Hi Averyll

I have organised the lab to report the additional metals

I will aim to have the results for you on Monday

Thanks

Regards

CERTIFICATE OF ANALYSIS

Work Order : **EM1704573**
Client : **AECOM Australia Pty Ltd**
Contact : **MS AVERYLL COYNE**
Address : **COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET
MELBOURNE VIC, AUSTRALIA 3000**
Telephone : **+61 03 9653 1234**
Project : **60537182**
Order number : **Task 3.4**
C-O-C number : **----**
Sampler : **JM**
Site : **----**
Quote number : **EN/004/16**
No. of samples received : **50**
No. of samples analysed : **8**

Page : 1 of 9
Laboratory : Environmental Division Melbourne
Contact : Carol Walsh
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9608
Date Samples Received : 12-Apr-2017 10:30
Date Analysis Commenced : 13-Apr-2017
Issue Date : 24-Apr-2017 18:01



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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
Eric Chau	Metals Team Leader	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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020F: Results for EM1704573-006 and 007 have been confirmed by re-preparation 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW65_0.05	GW65_0.50	GW70_0.50	GW52_0.50	GW75_1.00
Client sampling date / time				12-Apr-2017 00:00	13-Apr-2017 00:00	11-Apr-2017 00:00	11-Apr-2017 00:00	10-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1704573-002	EM1704573-003	EM1704573-021	EM1704573-026	EM1704573-045	
				Result	Result	Result	Result	Result	
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	7.4	7.5	7.6	4.6	7.4	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%	15.8	17.9	10.2	11.7	12.3	
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	9910	12100	240	8870	5420	
Iron	7439-89-6	50	mg/kg	25300	23400	500	20400	21700	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Arsenic	7440-38-2	5	mg/kg	15	17	<5	7	25	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	41	28	<2	24	14	
Copper	7440-50-8	5	mg/kg	72	10	<5	27	89	
Lead	7439-92-1	5	mg/kg	131	14	6	52	617	
Nickel	7440-02-0	2	mg/kg	43	16	<2	11	18	
Zinc	7440-66-6	5	mg/kg	252	27	<5	61	231	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	<0.1	0.1	2.3	
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	----	----	----	
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	----	----	----	
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	----	----	----	
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	----	----	----	
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074D: Fumigants									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW65_0.05	GW65_0.50	GW70_0.50	GW52_0.50	GW75_1.00
Client sampling date / time					12-Apr-2017 00:00	13-Apr-2017 00:00	11-Apr-2017 00:00	11-Apr-2017 00:00	10-Apr-2017 00:00
Compound	CAS Number	LOR	Unit	EM1704573-002	EM1704573-003	EM1704573-021	EM1704573-026	EM1704573-045	
				Result	Result	Result	Result	Result	
EP074D: Fumigants - Continued									
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	----	----	----	
Chloromethane	74-87-3	5	mg/kg	<5	<5	----	----	----	
Vinyl chloride	75-01-4	5	mg/kg	<5	<5	----	----	----	
Bromomethane	74-83-9	5	mg/kg	<5	<5	----	----	----	
Chloroethane	75-00-3	5	mg/kg	<5	<5	----	----	----	
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	----	----	----	
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	----	----	----	
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	----	----	----	
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW65_0.05	GW65_0.50	GW70_0.50	GW52_0.50	GW75_1.00
Client sampling date / time				12-Apr-2017 00:00	13-Apr-2017 00:00	11-Apr-2017 00:00	11-Apr-2017 00:00	10-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1704573-002	EM1704573-003	EM1704573-021	EM1704573-026	EM1704573-045	
				Result	Result	Result	Result	Result	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	4.4	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	8.1	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.6	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	4.4	
Phenanthrene	85-01-8	0.5	mg/kg	1.3	<0.5	<0.5	<0.5	30.2	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	12.8	
Fluoranthene	206-44-0	0.5	mg/kg	1.9	<0.5	<0.5	<0.5	49.5	
Pyrene	129-00-0	0.5	mg/kg	2.0	<0.5	<0.5	<0.5	51.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg	0.9	<0.5	<0.5	<0.5	29.0	
Chrysene	218-01-9	0.5	mg/kg	0.8	<0.5	<0.5	<0.5	23.4	
Benzo(b+)fluoranthene	205-99-2	205-82-3	0.5	0.9	<0.5	<0.5	<0.5	37.7	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	12.0	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.7	<0.5	<0.5	<0.5	28.1	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	12.0	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	3.4	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	10.9	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	8.5	<0.5	<0.5	<0.5	319	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	0.9	<0.5	<0.5	<0.5	40.9	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	1.2	0.6	0.6	0.6	40.9	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW65_0.05	GW65_0.50	GW70_0.50	GW52_0.50	GW75_1.00
Client sampling date / time				12-Apr-2017 00:00	13-Apr-2017 00:00	11-Apr-2017 00:00	11-Apr-2017 00:00	10-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1704573-002	EM1704573-003	EM1704573-021	EM1704573-026	EM1704573-045	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.5	1.2	1.2	1.2	40.9	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	130	
C15 - C28 Fraction	----	100	mg/kg	210	<100	<100	<100	1500	
C29 - C36 Fraction	----	100	mg/kg	140	<100	<100	<100	990	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	350	<50	<50	<50	2620	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	180	
>C16 - C34 Fraction	----	100	mg/kg	290	<100	<100	<100	2080	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	500	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	290	<50	<50	<50	2760	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	180	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	1.0	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	1.5	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	2	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	80.8	90.4	----	----	----	
Toluene-D8	2037-26-5	0.5	%	92.1	103	----	----	----	
4-Bromofluorobenzene	460-00-4	0.5	%	90.8	97.4	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	84.1	78.9	79.3	79.3	79.2	
2-Chlorophenol-D4	93951-73-6	0.5	%	101	94.3	96.1	95.7	95.8	
2,4,6-Tribromophenol	118-79-6	0.5	%	74.1	61.9	59.6	65.6	87.4	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW65_0.05	GW65_0.50	GW70_0.50	GW52_0.50	GW75_1.00
Client sampling date / time				12-Apr-2017 00:00	13-Apr-2017 00:00	11-Apr-2017 00:00	11-Apr-2017 00:00	10-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1704573-002	EM1704573-003	EM1704573-021	EM1704573-026	EM1704573-045	
				Result	Result	Result	Result	Result	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	120	109	109	111	119	
Anthracene-d10	1719-06-8	0.5	%	124	118	119	124	101	
4-Terphenyl-d14	1718-51-0	0.5	%	105	105	105	107	93.6	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	79.0	88.3	74.3	90.4	94.5	
Toluene-D8	2037-26-5	0.2	%	83.7	93.8	82.5	97.9	99.0	
4-Bromofluorobenzene	460-00-4	0.2	%	105	113	108	119	118	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC01	QC02	QC05	----	----
Client sampling date / time				10-Apr-2017 00:00	11-Apr-2017 00:00	12-Apr-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1704573-006	EM1704573-007	EM1704573-010	-----	-----	
				Result	Result	Result	----	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.04	0.03	----	----	----	
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	0.008	0.014	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----	
Iron	7439-89-6	0.05	mg/L	<0.05	0.05	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	95.5	92.6	103	----	----	
Toluene-D8	2037-26-5	2	%	86.8	80.6	95.6	----	----	
4-Bromofluorobenzene	460-00-4	2	%	90.4	87.2	98.7	----	----	



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	62	122
Toluene-D8	2037-26-5	64	120
4-Bromofluorobenzene	460-00-4	66	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124
Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
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	: EM1704573	Page	: 1 of 15
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 12-Apr-2017
Order number	: Task 3.4	Date Analysis Commenced	: 13-Apr-2017
C-O-C number	: ----	Issue Date	: 24-Apr-2017
Sampler	: JM		
Site	: ----		
Quote number	: EN/004/16		
No. of samples received	: 50		
No. of samples analysed	: 8		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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.

Signatories	Position	Accreditation Category
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	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: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 842481)									
EM1704573-045	GW75_1.00	EA001: pH (CaCl2)	----	0.1	pH Unit	7.4	7.7	3.97	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 842891)									
EM1704573-021	GW70_0.50	EA001: pH (CaCl2)	----	0.1	pH Unit	7.6	7.5	1.32	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 843634)									
EM1704573-002	GW65_0.05	EA001: pH (CaCl2)	----	0.1	pH Unit	7.4	7.3	1.36	0% - 20%
EM1704714-009	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.3	7.2	1.38	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 844648)									
EM1704573-003	GW65_0.50	EA001: pH (CaCl2)	----	0.1	pH Unit	7.5	7.5	0.00	0% - 20%
EA055: Moisture Content (QC Lot: 843789)									
EM1704537-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	26.8	28.0	4.69	0% - 20%
EM1704537-044	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	10.1	11.0	8.50	0% - 50%
EA055: Moisture Content (QC Lot: 845013)									
EM1704573-021	GW70_0.50	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	10.2	11.3	10.7	0% - 50%
EM1704655-012	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	15.6	15.7	1.06	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 844653)									
EM1704573-002	GW65_0.05	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	41	34	19.1	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	43	49	14.6	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	15	10	37.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	72	61	15.6	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	131	128	2.11	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	252	262	4.15	0% - 20%
		EG005T: Aluminium	7429-90-5	50	mg/kg	9910	9860	0.435	0% - 20%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 844653) - continued									
EM1704573-002	GW65_0.05	EG005T: Iron	7439-89-6	50	mg/kg	25300	28100	10.3	0% - 20%
EM1704638-015	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	17	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	9	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	65	86	27.7	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	90	102	12.6	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	304	331	8.50	0% - 20%
		EG005T: Aluminium	7429-90-5	50	mg/kg	6000	5950	0.903	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	15400	14400	6.56	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 844654)									
EM1704573-002	GW65_0.05	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.00	No Limit
EM1704638-015	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 843567)									
EM1704573-002	GW65_0.05	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 843567)									
EM1704573-002	GW65_0.05	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 843567)									
EM1704573-002	GW65_0.05	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074D: Fumigants (QC Lot: 843567)									
EM1704573-002	GW65_0.05	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 843567)									
EM1704573-002	GW65_0.05	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				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: 843567) - continued									
EM1704573-002	GW65_0.05	EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit
EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit		
EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit		
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 843567)									
EM1704573-002	GW65_0.05	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 843567)									
EM1704573-002	GW65_0.05	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP074G: Trihalomethanes (QC Lot: 843567) - continued										
EM1704573-002	GW65_0.05	EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 844717)										
EM1704573-002	GW65_0.05	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	1.3	<0.5	86.8	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.9	1.1	50.7	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	2.0	1.2	46.1	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.9	0.6	28.8	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.8	0.6	24.8	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	0.9	0.8	20.6	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.7	0.5	29.5	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EM1704717-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 843081)										
EM1704573-021	GW70_0.50	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit	
EM1704729-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit	



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 843568)										
EM1704573-002	GW65_0.05	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 844718)										
EM1704573-002	GW65_0.05	EP071: C15 - C28 Fraction	----	100	mg/kg	210	120	56.4	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	140	130	13.4	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	350	250	33.3	No Limit	
EM1704717-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 843081)										
EM1704573-021	GW70_0.50	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit	
EM1704729-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 843568)										
EM1704573-002	GW65_0.05	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 844718)										
EM1704573-002	GW65_0.05	EP071: >C16 - C34 Fraction	----	100	mg/kg	290	190	41.1	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	290	190	41.7	No Limit	
EM1704717-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
EP080: BTEXN (QC Lot: 843081)										
EM1704573-021	GW70_0.50	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EM1704729-002	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit			
EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit			



Sub-Matrix: **SOIL**

				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: 843568)										
EM1704573-002	GW65_0.05	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
	EP080: Naphthalene	91-20-3	1	mg/kg	<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 (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 843103)									
EM1704615-008	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0002	0.0002	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.012	0.012	0.00	0% - 50%
		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	0.006	0.006	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.025	0.025	0.00	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.162	0.173	6.58	0% - 20%
		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	52.0	55.2	5.97	0% - 20%
EM1704573-006	QC01	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	<0.001	<0.001	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: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.008	0.008	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.04	0.06	48.9	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	<0.05	<0.05	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 843104)									
EM1704670-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1704573-006	QC01	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 842060)									
EM1704573-006	QC01	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1704709-011	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 842060)									
EM1704573-006	QC01	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1704709-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	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: 842060)									
EM1704573-006	QC01	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
EM1704709-011	Anonymous	EP080: Benzene	71-43-2	1	µg/L	14	14	0.00	0% - 50%
		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: **SOIL**

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	
EG005T: Total Metals by ICP-AES (QCLot: 844653)									
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	6134 mg/kg	107	93	115	
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	99.6	79	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	92.2	85	109	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	96.8	89	113	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	94.6	84	116	
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	100	95	109	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	100	85	107	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	95.2	89	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	93.2	93	109	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.7	89	111	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 844654)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	89.1	85	103	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 843567)									
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	114	77	118	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	116	77	116	
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	98.1	68	111	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	99.3	71	111	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	95.8	69	113	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	97.1	72	108	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	101	73	111	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	111	70	115	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	97.8	60	110	
EP074B: Oxygenated Compounds (QCLot: 843567)									
EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	10 mg/kg	94.4	63	128	
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	89.8	68	142	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	10 mg/kg	85.0	67	123	
EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	10 mg/kg	95.6	62	128	
EP074C: Sulfonated Compounds (QCLot: 843567)									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	79.2	50	128	
EP074D: Fumigants (QCLot: 843567)									
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	101	65	115	
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	96.0	78	116	
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	74.0	64	104	
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	74.0	61	103	



Sub-Matrix: SOIL

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	
EP074D: Fumigants (QCLot: 843567) - continued									
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	98.5	73	117	
EP074E: Halogenated Aliphatic Compounds (QCLot: 843567)									
EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	10 mg/kg	85.7	45	123	
EP074: Chloromethane	74-87-3	5	mg/kg	<5	10 mg/kg	106	55	133	
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	96.8	58	138	
EP074: Bromomethane	74-83-9	5	mg/kg	<5	10 mg/kg	81.7	43	133	
EP074: Chloroethane	75-00-3	5	mg/kg	<5	10 mg/kg	106	66	126	
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	10 mg/kg	104	64	122	
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	103	68	120	
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	70.3	47	116	
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	102	70	118	
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	100	75	118	
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	104	78	120	
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	95.2	68	110	
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	99.0	70	116	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	87.9	62	111	
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	97.2	69	116	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	110	77	119	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	84.9	74	114	
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	105	80	120	
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	112	78	120	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	121	73	121	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	86.8	65	109	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	85.7	56	114	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	80.9	40	114	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	100	76	124	
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	99.5	75	123	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	68.8	45	123	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	66.9	54	106	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	118	60	118	
EP074F: Halogenated Aromatic Compounds (QCLot: 843567)									
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	112	82	117	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	92.5	75	113	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	97.8	74	113	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	95.2	72	112	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	108	75	115	
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	113	77	120	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	106	81	115	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	106	64	118	



Sub-Matrix: SOIL

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	
EP074F: Halogenated Aromatic Compounds (QCLot: 843567) - continued									
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	111	76	120	
EP074G: Trihalomethanes (QCLot: 843567)									
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	103	77	123	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	82.2	65	107	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	79.0	61	105	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	71.8	54	104	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 844717)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	109	80	121	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	94.2	70	130	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	102	80	120	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	102	70	124	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	95.0	80	122	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	97.2	80	126	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	105	70	128	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	106	80	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	90.0	70	130	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	99.0	80	126	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	81.6	70	124	
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	93.3	75	125	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	81.9	65	125	
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	85.8	65	128	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	88.4	65	126	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	84.0	65	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 843081)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	118	70	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 843568)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	103	70	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 844718)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	734 mg/kg	109	65	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3091 mg/kg	110	70	126	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1507 mg/kg	106	70	122	
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 843081)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	118	68	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 843568)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	99.0	68	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 844718)									



Sub-Matrix: **SOIL**

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	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 844718) - continued									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1101 mg/kg	106	68	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3914 mg/kg	107	72	116	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	283 mg/kg	116	38	132	
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080: BTEXN (QCLot: 843081)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	106	74	124	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	109	77	125	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	109	73	125	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	116	77	128	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	114	81	128	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	112	66	130	
EP080: BTEXN (QCLot: 843568)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	107	74	124	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	105	77	125	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	104	73	125	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	102	77	128	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	109	81	128	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	97.0	66	130	

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	
EG020F: Dissolved Metals by ICP-MS (QCLot: 843103)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	96.1	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.5	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	89.3	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.1	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.0	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	92.2	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.1	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	90.6	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	101	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.1	94	106	
EG035F: Dissolved Mercury by FIMS (QCLot: 843104)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	98.5	88	117	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 842060)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	89.2	67	127	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		
						LCS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 842060)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	87.5	65	125
EP080: BTEXN (QCLot: 842060)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	84.4	76	120
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	98.1	76	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	93.3	72	124
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	96.2	72	130
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	95.2	78	128
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	112	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: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%) Low High	
EG005T: Total Metals by ICP-AES (QCLot: 844653)							
EM1704573-003	GW65_0.50	EG005T: Arsenic	7440-38-2	50 mg/kg	96.1	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	96.5	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	107	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	100	76	124
		EG005T: Nickel	7440-02-0	50 mg/kg	95.6	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	103	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	93.0	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 844654)							
EM1704573-003	GW65_0.50	EG035T: Mercury	7439-97-6	5 mg/kg	100	76	116
EP074E: Halogenated Aliphatic Compounds (QCLot: 843567)							
EM1704573-003	GW65_0.50	EP074: 1,1-Dichloroethene	75-35-4	2 mg/kg	103	29	141
		EP074: Trichloroethene	79-01-6	2 mg/kg	98.5	50	126
EP074F: Halogenated Aromatic Compounds (QCLot: 843567)							
EM1704573-003	GW65_0.50	EP074: Chlorobenzene	108-90-7	2 mg/kg	114	65	133
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 844717)							
EM1704573-021	GW70_0.50	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	95.5	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	113	52	148
EP080/071: Total Petroleum Hydrocarbons (QCLot: 843081)							



Sub-Matrix: **SOIL**

				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: 843081) - continued							
EM1704573-026	GW52_0.50	EP080: C6 - C9 Fraction	----	28 mg/kg	105	42	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 843568)							
EM1704573-003	GW65_0.50	EP080: C6 - C9 Fraction	----	28 mg/kg	91.9	42	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 844718)							
EM1704573-003	GW65_0.50	EP071: C10 - C14 Fraction	----	734 mg/kg	97.7	53	123
		EP071: C15 - C28 Fraction	----	3091 mg/kg	98.6	70	124
		EP071: C29 - C36 Fraction	----	1507 mg/kg	94.7	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 843081)							
EM1704573-026	GW52_0.50	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	105	39	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 843568)							
EM1704573-003	GW65_0.50	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	87.0	39	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 844718)							
EM1704573-003	GW65_0.50	EP071: >C10 - C16 Fraction	----	1101 mg/kg	94.6	65	123
		EP071: >C16 - C34 Fraction	----	3914 mg/kg	95.4	67	121
		EP071: >C34 - C40 Fraction	----	283 mg/kg	101	44	126
EP080: BTEXN (QCLot: 843081)							
EM1704573-026	GW52_0.50	EP080: Benzene	71-43-2	2 mg/kg	111	50	136
		EP080: Toluene	108-88-3	2 mg/kg	114	56	139
EP080: BTEXN (QCLot: 843568)							
EM1704573-003	GW65_0.50	EP080: Benzene	71-43-2	2 mg/kg	112	50	136
		EP080: Toluene	108-88-3	2 mg/kg	119	56	139

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
EG020F: Dissolved Metals by ICP-MS (QCLot: 843103)							
EM1704573-006	QC01	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	99.4	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	99.0	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	95.4	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	98.3	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	98.8	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	97.8	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	98.2	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 843104)							
EM1704573-007	QC02	EG035F: Mercury	7439-97-6	0.01 mg/L	108	70	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 842060)							



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EP080/071: Total Petroleum Hydrocarbons (QCLot: 842060) - continued							
EM1704573-007	QC02	EP080: C6 - C9 Fraction	----	280 µg/L	67.0	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 842060)							
EM1704573-007	QC02	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	64.3	44	122
EP080: BTEXN (QCLot: 842060)							
EM1704573-007	QC02	EP080: Benzene	71-43-2	20 µg/L	89.1	68	130
		EP080: Toluene	108-88-3	20 µg/L	85.7	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1704573	Page	: 1 of 10
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 12-Apr-2017
Site	: ----	Issue Date	: 24-Apr-2017
Sampler	: JM	No. of samples received	: 50
Order number	: Task 3.4	No. of samples analysed	: 8

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.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



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: **SOIL**

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
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) GW75_1.00	10-Apr-2017	13-Apr-2017	17-Apr-2017	✓	13-Apr-2017	13-Apr-2017	✓
Soil Glass Jar - Unpreserved (EA001) GW70_0.50, GW52_0.50	11-Apr-2017	18-Apr-2017	18-Apr-2017	✓	18-Apr-2017	18-Apr-2017	✓
Soil Glass Jar - Unpreserved (EA001) GW65_0.05	12-Apr-2017	19-Apr-2017	19-Apr-2017	✓	19-Apr-2017	19-Apr-2017	✓
Soil Glass Jar - Unpreserved (EA001) GW65_0.50	13-Apr-2017	19-Apr-2017	20-Apr-2017	✓	19-Apr-2017	19-Apr-2017	✓
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103) GW75_1.00	10-Apr-2017	----	----	----	19-Apr-2017	24-Apr-2017	✓
Soil Glass Jar - Unpreserved (EA055-103) GW70_0.50, GW52_0.50	11-Apr-2017	----	----	----	19-Apr-2017	25-Apr-2017	✓
Soil Glass Jar - Unpreserved (EA055-103) GW65_0.05	12-Apr-2017	----	----	----	18-Apr-2017	26-Apr-2017	✓
Soil Glass Jar - Unpreserved (EA055-103) GW65_0.50	13-Apr-2017	----	----	----	18-Apr-2017	27-Apr-2017	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) GW75_1.00	10-Apr-2017	20-Apr-2017	07-Oct-2017	✓	20-Apr-2017	07-Oct-2017	✓
Soil Glass Jar - Unpreserved (EG005T) GW70_0.50, GW52_0.50	11-Apr-2017	20-Apr-2017	08-Oct-2017	✓	20-Apr-2017	08-Oct-2017	✓
Soil Glass Jar - Unpreserved (EG005T) GW65_0.05	12-Apr-2017	20-Apr-2017	09-Oct-2017	✓	20-Apr-2017	09-Oct-2017	✓
Soil Glass Jar - Unpreserved (EG005T) GW65_0.50	13-Apr-2017	20-Apr-2017	10-Oct-2017	✓	20-Apr-2017	10-Oct-2017	✓



Matrix: SOIL

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
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) GW75_1.00	10-Apr-2017	20-Apr-2017	08-May-2017	✓	20-Apr-2017	08-May-2017	✓
Soil Glass Jar - Unpreserved (EG035T) GW70_0.50, GW52_0.50	11-Apr-2017	20-Apr-2017	09-May-2017	✓	20-Apr-2017	09-May-2017	✓
Soil Glass Jar - Unpreserved (EG035T) GW65_0.05	12-Apr-2017	20-Apr-2017	10-May-2017	✓	20-Apr-2017	10-May-2017	✓
Soil Glass Jar - Unpreserved (EG035T) GW65_0.50	13-Apr-2017	20-Apr-2017	11-May-2017	✓	20-Apr-2017	11-May-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074) GW65_0.05	12-Apr-2017	18-Apr-2017	19-Apr-2017	✓	19-Apr-2017	19-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP074) GW65_0.50	13-Apr-2017	18-Apr-2017	20-Apr-2017	✓	19-Apr-2017	20-Apr-2017	✓
EP074B: Oxygenated Compounds							
Soil Glass Jar - Unpreserved (EP074) GW65_0.05	12-Apr-2017	18-Apr-2017	19-Apr-2017	✓	19-Apr-2017	19-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP074) GW65_0.50	13-Apr-2017	18-Apr-2017	20-Apr-2017	✓	19-Apr-2017	20-Apr-2017	✓
EP074C: Sulfonated Compounds							
Soil Glass Jar - Unpreserved (EP074) GW65_0.05	12-Apr-2017	18-Apr-2017	19-Apr-2017	✓	19-Apr-2017	19-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP074) GW65_0.50	13-Apr-2017	18-Apr-2017	20-Apr-2017	✓	19-Apr-2017	20-Apr-2017	✓
EP074D: Fumigants							
Soil Glass Jar - Unpreserved (EP074) GW65_0.05	12-Apr-2017	18-Apr-2017	19-Apr-2017	✓	19-Apr-2017	19-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP074) GW65_0.50	13-Apr-2017	18-Apr-2017	20-Apr-2017	✓	19-Apr-2017	20-Apr-2017	✓
EP074E: Halogenated Aliphatic Compounds							
Soil Glass Jar - Unpreserved (EP074) GW65_0.05	12-Apr-2017	18-Apr-2017	19-Apr-2017	✓	19-Apr-2017	19-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP074) GW65_0.50	13-Apr-2017	18-Apr-2017	20-Apr-2017	✓	19-Apr-2017	20-Apr-2017	✓
EP074F: Halogenated Aromatic Compounds							
Soil Glass Jar - Unpreserved (EP074) GW65_0.05	12-Apr-2017	18-Apr-2017	19-Apr-2017	✓	19-Apr-2017	19-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP074) GW65_0.50	13-Apr-2017	18-Apr-2017	20-Apr-2017	✓	19-Apr-2017	20-Apr-2017	✓



Matrix: SOIL

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
EP074G: Trihalomethanes							
Soil Glass Jar - Unpreserved (EP074) GW65_0.05	12-Apr-2017	18-Apr-2017	19-Apr-2017	✓	19-Apr-2017	19-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP074) GW65_0.50	13-Apr-2017	18-Apr-2017	20-Apr-2017	✓	19-Apr-2017	20-Apr-2017	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) GW75_1.00	10-Apr-2017	19-Apr-2017	24-Apr-2017	✓	19-Apr-2017	29-May-2017	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) GW70_0.50, GW52_0.50	11-Apr-2017	19-Apr-2017	25-Apr-2017	✓	19-Apr-2017	29-May-2017	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) GW65_0.05	12-Apr-2017	19-Apr-2017	26-Apr-2017	✓	19-Apr-2017	29-May-2017	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) GW65_0.50	13-Apr-2017	19-Apr-2017	27-Apr-2017	✓	19-Apr-2017	29-May-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) GW75_1.00	10-Apr-2017	13-Apr-2017	24-Apr-2017	✓	19-Apr-2017	24-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW75_1.00	10-Apr-2017	19-Apr-2017	24-Apr-2017	✓	19-Apr-2017	29-May-2017	✓
Soil Glass Jar - Unpreserved (EP080) GW70_0.50, GW52_0.50	11-Apr-2017	18-Apr-2017	25-Apr-2017	✓	19-Apr-2017	25-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW70_0.50, GW52_0.50	11-Apr-2017	19-Apr-2017	25-Apr-2017	✓	19-Apr-2017	29-May-2017	✓
Soil Glass Jar - Unpreserved (EP080) GW65_0.05	12-Apr-2017	18-Apr-2017	26-Apr-2017	✓	19-Apr-2017	26-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW65_0.05	12-Apr-2017	19-Apr-2017	26-Apr-2017	✓	19-Apr-2017	29-May-2017	✓
Soil Glass Jar - Unpreserved (EP080) GW65_0.50	13-Apr-2017	18-Apr-2017	27-Apr-2017	✓	19-Apr-2017	27-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW65_0.50	13-Apr-2017	19-Apr-2017	27-Apr-2017	✓	19-Apr-2017	29-May-2017	✓



Matrix: **SOIL**

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 Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) GW75_1.00	10-Apr-2017	13-Apr-2017	24-Apr-2017	✓	19-Apr-2017	24-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW75_1.00	10-Apr-2017	19-Apr-2017	24-Apr-2017	✓	19-Apr-2017	29-May-2017	✓
Soil Glass Jar - Unpreserved (EP080) GW70_0.50, GW52_0.50	11-Apr-2017	18-Apr-2017	25-Apr-2017	✓	19-Apr-2017	25-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW70_0.50, GW52_0.50	11-Apr-2017	19-Apr-2017	25-Apr-2017	✓	19-Apr-2017	29-May-2017	✓
Soil Glass Jar - Unpreserved (EP080) GW65_0.05	12-Apr-2017	18-Apr-2017	26-Apr-2017	✓	19-Apr-2017	26-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW65_0.05	12-Apr-2017	19-Apr-2017	26-Apr-2017	✓	19-Apr-2017	29-May-2017	✓
Soil Glass Jar - Unpreserved (EP080) GW65_0.50	13-Apr-2017	18-Apr-2017	27-Apr-2017	✓	19-Apr-2017	27-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW65_0.50	13-Apr-2017	19-Apr-2017	27-Apr-2017	✓	19-Apr-2017	29-May-2017	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) GW75_1.00	10-Apr-2017	13-Apr-2017	24-Apr-2017	✓	19-Apr-2017	24-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP080) GW70_0.50, GW52_0.50	11-Apr-2017	18-Apr-2017	25-Apr-2017	✓	19-Apr-2017	25-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP080) GW65_0.05	12-Apr-2017	18-Apr-2017	26-Apr-2017	✓	19-Apr-2017	26-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP080) GW65_0.50	13-Apr-2017	18-Apr-2017	27-Apr-2017	✓	19-Apr-2017	27-Apr-2017	✓

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) QC01	10-Apr-2017	----	----	----	18-Apr-2017	07-Oct-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) QC02	11-Apr-2017	----	----	----	18-Apr-2017	08-Oct-2017	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) QC01	10-Apr-2017	----	----	----	19-Apr-2017	08-May-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) QC02	11-Apr-2017	----	----	----	19-Apr-2017	09-May-2017	✓



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) QC01	10-Apr-2017	19-Apr-2017	24-Apr-2017	✓	21-Apr-2017	24-Apr-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC02	11-Apr-2017	19-Apr-2017	25-Apr-2017	✓	21-Apr-2017	25-Apr-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC05	12-Apr-2017	19-Apr-2017	26-Apr-2017	✓	21-Apr-2017	26-Apr-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) QC01	10-Apr-2017	19-Apr-2017	24-Apr-2017	✓	21-Apr-2017	24-Apr-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC02	11-Apr-2017	19-Apr-2017	25-Apr-2017	✓	21-Apr-2017	25-Apr-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC05	12-Apr-2017	19-Apr-2017	26-Apr-2017	✓	21-Apr-2017	26-Apr-2017	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC01	10-Apr-2017	19-Apr-2017	24-Apr-2017	✓	21-Apr-2017	24-Apr-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC02	11-Apr-2017	19-Apr-2017	25-Apr-2017	✓	21-Apr-2017	25-Apr-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC05	12-Apr-2017	19-Apr-2017	26-Apr-2017	✓	21-Apr-2017	26-Apr-2017	✓



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: **SOIL**

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	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	5	36	13.89	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-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	14	21.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.26	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-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.26	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-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.26	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-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	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	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	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	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP) - Continued							
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	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 in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Higginson 4B1 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	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. Mercury in solids are determined following an appropriate acid digestion. 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)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds	EP074	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
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.
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)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
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.



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WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembala@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS:		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Melbourne		<input type="checkbox"/> Standard TAT (List due date): (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		<input type="checkbox"/> Non Standard or urgent TAT (List due date):	
PROJECT:		ALS QUOTE NO.:		COC SEQUENCE NUMBER (Circle) COC: ① 2 3 4 5 6 7 OF: 1 2 3 ④ 5 6 7	
ORDER NUMBER: 60537182		CONTACT PH: 0499 252 502		<input type="checkbox"/> Custody Seal intact? Yes No N/A <input type="checkbox"/> Enabled by frozen/ice packs present upon receipt? Yes No N/A <input type="checkbox"/> Random Sample Temperature on Receipt: 6.4°C Other comment:	
PROJECT MANAGER: Averyll Coyne		SAMPLER: JM		RECEIVED BY:	
SAMPLER MOBILE:		DATE/TIME: 12/4/17		DATE/TIME: 12/4, 1030	
COC emailed to ALS? (YES / NO)		RECEIVED BY: [Signature]		DATE/TIME:	
EDD FORMAT (or default):		DATE/TIME:		DATE/TIME:	
Email Reports to: Averyll.coyne@Aecom.com dugald.cunningham@Aecom.com		DATE/TIME:		DATE/TIME:	
Email Invoice to: Averyll.Coyne@aceom.com		DATE/TIME:		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID(S) WATER(W)			CONTAINER INFORMATION			ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to 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 <i>codes below</i>	(refer to)	TOTAL CONTAINERS	Metals	TRH(C6-C40)	BTEXN	TPH	PAHS	VOC	TRHC6-C9	HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	GW61_0.50	11/04/17	S	n/a		2J	↑								Environmental Division Melbourne Work Order Reference EM1704573  Telephone : + 61-3-8549 9600
	GW65_0.05	12/04/17	S	n/a		2J									
	GW65_0.50	13/04/17	S	n/a		2J									
	GW65_1.00	11/04/17	S	n/a		2J									
	GW65_1.50	11/04/17	S	n/a		2J									
	QC01	10/04/17	S	n/a		2J									
	QC02	11/04/17	S	n/a		2J									
	QC03	12/04/17	S	n/a		2J									
	QC04	12/04/17	S	n/a		2J									
	QC05	12/04/17	S	n/a		2J									
			S	n/a		2J									
			S	n/a		2J									
TOTAL															

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 Glass;
 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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Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		<input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Melbourne		<input type="checkbox"/> Non Standard or urgent TAT (List due date):		COC SEQUENCE NUMBER (Circle)		Custody Seal Intact? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> N/A	
PROJECT:		ALS QUOTE NO.:		COC: 1 2 3 4 5 6 7		Free ice/frozen ice bricks present upon receipt? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> N/A	
ORDER NUMBER: 60537182				OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> N/A	
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		RELINQUISHED BY: <i>DC</i>		RECEIVED BY:	
SAMPLER: JM		SAMPLER MOBILE:		DATE/TIME: 12/4/17		DATE/TIME:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY: <i>MAN (MS)</i>		DATE/TIME: 12/4 10:30	
Email Reports to: Averyll.coyne@Aecom.com dugald.cunningham@Aecom.com				DATE/TIME:			
Email Invoice to: Averyll.Coyne@Aecom.com							

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to 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 codes below (refer to)	TOTAL CONTAINERS	Metals	TRH(C6-C40)	BTEXN	TPH	PAHs	VOC	TRHC6-C9	HOLD	
		GW72_0.05	10/04/17	S	n/a	2J									
		GW72_0.50	10/04/17	S	n/a	2J									
		GW72_0.70	10/04/17	S	n/a	2J									
		GW72_1.00	11/04/17	S	n/a	2J									
		GW72_1.50	10/04/17	S	n/a	2J									
		GW69_0.05	11/04/17	S	n/a	2J									
		GW69_0.50	11/04/17	S	n/a	2J									
		GW69_1.00	11/04/17	S	n/a	2J									
		GW69_1.50	11/04/17	S	n/a	2J									
		GW70_0.20	11/04/17	S	n/a	2J									
		GW70_0.50	11/04/17	S	n/a	2J									
		GW70_0.80	11/04/17	S	n/a	2J									
TOTAL															

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 Glass;
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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QNEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
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QNOWRA 4/13 Gaery Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com
QPERTH 10 Hod Way Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

QSYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
QTOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0800 E: townsville.environmental@alsglobal.com
QWOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd	TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date): (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	FOR LABORATORY USE ONLY (Circle) Custody seal intact? Yes No NA Frac/ice / freezer packs present upon receipt? Yes No NA Random sample temperature on Receipt? <input checked="" type="checkbox"/> Other comment:
OFFICE: Melbourne	<input type="checkbox"/> Non Standard or urgent TAT (List due date):	
PROJECT:	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle)
ORDER NUMBER: 60537182		COC: 1 2 3 4 5 6 7 OP: 1 2 3 4 5 6 7

PROJECT MANAGER: Averyll Coyne	CONTACT PH: 0499 252 502	RELINQUISHED BY: <i>DSC</i>	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: <i>Mark Fen</i>
SAMPLER: JM	SAMPLER MOBILE:	DATE/TIME: 12/4/17	DATE/TIME:	DATE/TIME:	DATE/TIME: 12/4 10:30
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):				
Email Reports to: Averyll.coyne@Aecom.com dugald.cunningham@Aecom.com					
Email invoice to: Averyll.Coyne@aceom.com					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S)-WATER (W)			CONTAINER INFORMATION			ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below <i>(refer to)</i>	TOTAL CONTAINERS	Metals	TRH(C6-C40)	BTEXN	TPH	PAHs	VOC	TRHC6-C9	HOLD	
	GW70 1.00		11/04/17	S	n/a	2J									
	GW52 1.50		11/04/17	S	n/a	2J									
	GW52 0.05		11/04/17	S	n/a	2J									
	GW52 0.50		11/04/17	S	n/a	2J									
	GW52 0.70		11/04/17	S	n/a	2J									
	GW51 1.00		11/04/17	S	n/a	2J									
	GW51 1.50		11/04/17	S	n/a	2J									
	GW51 0.05		11/04/17	S	n/a	2J									
	GW51 0.50		11/04/17	S	n/a	2J									
	GW61 1.00		11/04/17	S	n/a	2J									
	GW61 1.50		11/04/17	S	n/a	2J									
	GW61 0.05		11/04/17	S	n/a	2J									
TOTAL															

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 Glass;
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:
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LADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callimondah Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

NEWCASTLE 5/5B5 Mailand Rd Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2083 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembia@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		<input type="checkbox"/> Standard TAT (List due date): <input type="checkbox"/> Non Standard or urgent TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Melbourne		ALS QUOTE NO.:		COC SEQUENCE NUMBER (Circle)		Custody Seal intact: Yes No N/A Free ice / frozen ice blocks present upon receipt: Yes No N/A Random Sample Temperature on Receipt: °C	
PROJECT:		ORDER NUMBER: 60537182		COC: 1 2 3 4 5 6 7			
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		OF: 1 2 3 4 5 6 7			
SAMPLER: JM		SAMPLER MOBILE:		RELINQUISHED BY: JTC		RECEIVED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME: 12/4/17		DATE/TIME:	
Email Reports to: Averyll.coyne@Aecom.com dugald.cunningham@Aecom.com						RECEIVED BY: M Brown (AM)	
Email Invoice to: Averyll.Coyne@aceom.com						DATE/TIME: 12/11/17	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to 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 codes below <i>(refer to)</i>	TOTAL CONTAINERS	Metals	TRH(C6-C40)	BTEXN	TPH	PAHs	VOC	TRHC6-C9		HOLD
	GW81_0.05		10/04/17	S	n/a	2J									
	GW81_0.50		10/04/17	S	n/a	2J									
	GW81_1.00		10/04/17	S	n/a	2J									
	GW81_1.50		10/04/17	S	n/a	2J									
	GW80_0.05		10/04/17	S	n/a	2J									
	GW80_0.50		10/04/17	S	n/a	2J									
	GW80_1.00		10/04/17	S	n/a	2J									
	GW80_1.50		10/04/17	S	n/a	2J									
	GW75_0.05		10/04/17	S	n/a	2J									
	GW75_0.50		10/04/17	S	n/a	2J									
	GW75_1.00		10/04/17	S	n/a	2J									
	GW75_1.50		10/04/17	S	n/a	2J									
TOTAL															

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 Glass
 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:
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Ph: 08 8359 0890 E: adelaide@alsglobal.com
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Ph: 07 7471 5600 E: gladstone@alsglobal.com

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Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850
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NEWCASTLE 5/565 Maitland Rd Mayfield West NSW 2304
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NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com
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Ph: 08 9209 7655 E: samples.perth@alsglobal.com

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Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembra@alsglobal.com

CLIENT: COM Australia Pty Ltd	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	<input type="checkbox"/> Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)	
OFFICE: Melbourne	ALS QUOTE NO.:	<input type="checkbox"/> Non Standard or urgent TAT (List due date):	Custody/Seal Intact: Yes No N/A	Free Ice/frozen ice bricks present upon receipt: Yes No N/A
PROJECT:			Random Sample Temperature OK: Yes No N/A	Other comment:
ORDER NUMBER: 60537182			COC SEQUENCE NUMBER (Circle)	
PROJECT MANAGER: Averyll Coyne	CONTACT PH: 0499 252 502		COC: ① 2 3 4 5 6 7	
SAMPLER: JM	SAMPLER MOBILE:	RELINQUISHED BY: DR	OF: 1 2 3 ④ 5 6 7	
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):	DATE/TIME: 12/4/17	RECEIVED BY:	RECEIVED BY: [Signature]
Email Reports to: Averyll.coyne@Aecom.com dugald.cunningham@Aecom.com			DATE/TIME:	DATE/TIME: 12/4, 1030
Email Invoice to: Averyll.Coyne@Aecom.com				

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS		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	
	MATRIX: SOLID (S) WATER (W)			TYPE & PRESERVATIVE codes below	(refer to)	TOTAL CONTAINERS	Metals	TRH(C6-C40)	BTEXN	TPH	PAHS	VOC		TRHC6-C9
		11/04/17	S	n/a		2J								
		12/04/17	S	n/a		2J								
		13/04/17	S	n/a		2J								
		11/04/17	S	n/a		2J								
		11/04/17	S	n/a		2J								
		10/04/17	S	n/a		2J								
		11/04/17	S	n/a		2J								
		12/04/17	S	n/a		2J								
		12/04/17	S	n/a		2J								
		12/04/17	S	n/a		2J								
			S	n/a		2J								
			S	n/a		2J								
TOTAL														

SCANNED

HOLD

Environmental Division
Melbourne
Work Order Reference
EM1704573



Telephone: + 61-3-8549 9600

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 Glass;
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:
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DADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 46 Callmondah Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

MUDGEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com

PERTH 10 Hed Way Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Deema Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portKembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS :		<input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle) Custody Seal intact? Yes No N/A Free ice/freeze packs present upon receipt? Yes No N/A Random Sample Temperature on Receipt: °C Other comment:	
OFFICE: Adelaide		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)		<input type="checkbox"/> Non Standard or urgent TAT (List due date):			
PROJECT:		ALS QUOTE NO.:		COC SEQUENCE NUMBER (Circle)			
ORDER NUMBER: 60537182				coc: 1 2 3 4 5 6 7			
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		of: 1 2 3 4 5 6 7			
SAMPLER: JM		SAMPLER MOBILE:		RELINQUISHED BY: DJR		RECEIVED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME: 12/4/17		DATE/TIME:	
Email Reports to: Averyll.coyne@Aecom.com dugald.cunningham@Aecom.com						RECEIVED BY: MANN (MS)	
Email Invoice to: Averyll.Coyne@acoom.com						DATE/TIME: 12/4 10:30	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS			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
	MATRIX: SOLID (S) WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Metals	TRH(C6-C40)	BTEXN	TPH	PAHs	VOC	TRHC6-C9	HOLD	
	GW72 0.05	10/04/17	S	n/a	2J	↑								
	GW72 0.50	10/04/17	S	n/a	2J									
	GW72 0.70	10/04/17	S	n/a	2J									
	GW72 1.00	11/04/17	S	n/a	2J									
	GW72 1.50	10/04/17	S	n/a	2J									
	GW69 0.05	11/04/17	S	n/a	2J									
	GW69 0.50	11/04/17	S	n/a	2J									
	GW69 1.00	11/04/17	S	n/a	2J									
	GW69 1.50	11/04/17	S	n/a	2J									
	GW70 0.20	11/04/17	S	n/a	2J									
	GW70 0.50	11/04/17	S	n/a	2J									
	GW70 0.80	11/04/17	S	n/a	2J									
TOTAL														

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 Glass;
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:
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Ph: 07 4796 0500 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: port Kembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle): Custody Seal Intact? Yes No N/A Plastic/Amber Bottle Preservation? Yes No N/A Random Sample Temperature on Receipt? °C Other comment:	
OFFICE: Melbourne		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) <input type="checkbox"/> Non Standard or urgent TAT (List due date):			
PROJECT:		ALS QUOTE NO.:		COC SEQUENCE NUMBER (Circle)	
ORDER NUMBER: 60537182				COC: 1 2 3 4 5 6 7	
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		OF: 1 2 3 4 5 6 7	
SAMPLER: JM		SAMPLER MOBILE:		RECEIVED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY: <i>Mark Fen</i>	
Email Reports to: Averyll.coyne@Aecom.com dugald.cunningham@Aecom.com		RELINQUISHED BY: <i>DFC</i>		DATE/TIME: <i>12/4/17</i>	
Email Invoice to: Averyll.Coyne@aceom.com		DATE/TIME: <i>12/4/17</i>		DATE/TIME: <i>12/4 10:30</i>	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS			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	
	MATRIX: SOLID (S)/WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below	(refer to)	TOTAL CONTAINERS	Metals	TRH(C6-C40)	BTEXN	TPH	PAHS	VOC	TRHC6-C9		HOLD
	GW70_1.00	11/04/17	S	n/a		2J									
	GW52_1.50	11/04/17	S	n/a		2J									
	GW52_0.05	11/04/17	S	n/a		2J									
	GW52_0.50	11/04/17	S	n/a		2J									
	GW52_0.70	11/04/17	S	n/a		2J									
	GW51_1.00	11/04/17	S	n/a		2J									
	GW51_1.50	11/04/17	S	n/a		2J									
	GW51_0.05	11/04/17	S	n/a		2J									
	GW51_0.50	11/04/17	S	n/a		2J									
	GW61_1.00	11/04/17	S	n/a		2J									
	GW61_1.50	11/04/17	S	n/a		2J									
	GW61_0.05	11/04/17	S	n/a		2J									
TOTAL															

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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 Glass;
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solis; B = Unpreserved Bag.



CHAIN OF CUSTODY

ALS Laboratory:
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◻NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com

◻PERTH 10 Hod Way Malaga WA 6090
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Ph: 07 4796 0800 E: townsville.environmental@alsglobal.com

◻WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkambla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS :		<input type="checkbox"/> Standard TAT (List due date): <input type="checkbox"/> Non Standard or urgent TAT (List due date):		FOR LABORATORY USE ONLY (Circle) Custody Seal intact: Yes No N/A Presence of frozen ice blocks present upon receipt: Yes No N/A Random Sample Temperature on Receipt: °C	
OFFICE: Melbourne		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)					
PROJECT:		ALS QUOTE NO.:		COC SEQUENCE NUMBER (Circle)			
ORDER NUMBER: 60537182				COC: 1 2 3 ④ 5 6 7			
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		OF: 1 2 3 ④ 5 6 7			
SAMPLER: JM		SAMPLER MOBILE:		RELINQUISHED BY:		RECEIVED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME: 12/4/17		DATE/TIME: 12/4/17	
Email Reports to: Averyll.coyne@Aecom.com dugald.cunningham@Aecom.com							
Email Invoice to: Averyll.Coyne@aceom.com							

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS			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
	MATRIX: SOLID(S)/WATER(W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below	(refer to)	TOTAL CONTAINERS	Metals	TRH(C6-C40)	BTEXN	TPH	PAHs	VOC	TRHC6-C9	HOLD	
	GW81 0.05	10/04/17	S	n/a		2J									
	GW81 0.50	10/04/17	S	n/a		2J									
	GW81 1.00	10/04/17	S	n/a		2J									
	GW81 1.50	10/04/17	S	n/a		2J									
	GW80 0.05	10/04/17	S	n/a		2J									
	GW80 0.50	10/04/17	S	n/a		2J									
	GW80 1.00	10/04/17	S	n/a		2J									
	GW80 1.50	10/04/17	S	n/a		2J									
	GW75 0.05	10/04/17	S	n/a		2J									
	GW75 0.50	10/04/17	S	n/a		2J									
	GW75 1.00	10/04/17	S	n/a		2J									
	GW75 1.50	10/04/17	S	n/a		2J									
						TOTAL									

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 Glass
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Analysis rec'd 13/4/17 3:23 PM - AUS 102



CHAIN OF CUSTODY

ALS Laboratory
please tick →

ADLAIDE 21 Burma Road Pobraha SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Strand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callamundah Drive Clinton QLD 4680
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MACKAY 78 Harbour Road Mackay QLD 4740
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MELBOURNE 2-4 Westall Road Springvale VIC 3177
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MUDGEE 27 Sydney Road Mudgee NSW 2850
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NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Mafaga WA 6050
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Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2509
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):			
OFFICE: [redacted]		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) <input type="checkbox"/> Non Standard or urgent TAT (List due date):			
OBJECT: [redacted]		ALS QUOTE NO.:			
ORDER NUMBER: 60537182		COC SEQUENCE NUMBER (Circle) COC: ① 2 3 4 5 6 7 OF: 1 2 3 ⑤ 5 6 7			
OBJECT MANAGER: Averyll Coyns		CONTACT PH: 0499 252 502			
AMPLER: JM		SAMPLER MOBILE:		RELINQUISHED BY: [Signature]	
Emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY: [Signature]	
all Reports to: Averyll.coyns@Aecom.com dugald.cunningham@Aecom.com		DATE/TIME: 12/4/17		DATE/TIME:	
all Invoice to: Averyll.Coyns@Aecom.com				DATE/TIME: 12/4, 1030	

REMARKS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS		MATRIX	TYPE & PRESERVATIVE codes below	(refer to)	TOTAL CONTAINERS	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
	AB ID	SAMPLE ID					DATE / TIME	Metals	TRH(C6-C40)	BTEXN	PH	PAHs	VOC	TRH(C6-C9)	HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
	1	GW61_0.50	11/04/17	S	n/a	2J										X	
	2	GW65_0.05	12/04/17	S	n/a	2J	X	X			X	X	X				
	3	GW65_0.50	13/04/17	S	n/a	2J	X	X			X	X	X				
	4	GW65_1.00	11/04/17	S	n/a	2J										X	
	5	GW65_1.50	11/04/17	S	n/a	2J										X	
	6	QC01	10/04/17	S ^W	n/a 2x 40ml VOC + 1x red metals (F)	2J	X	X	X								
	7	QC02	11/04/17	S ^W	n/a "	2J	X	X	X								
	8	QC03	11/12/04/17	S ^W	n/a 1x 40ml VOC	2J	X		X								
	9	QC04	11/12/04/17	S ^W	n/a "	2J	X		X								
	10	QC05	12/04/17	S ^W	n/a "	2J	X	X	X								
				S	n/a	2J											
				S	n/a	2J											
				S ^D	n/a	2J											
				S	n/a	2J											
						TOTAL											

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



CHAIN OF CUSTODY

ALS Laboratory
please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com

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MELBOURNE 2 4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

MUDGEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 8735 E: mudgee.m@alsglobal.com

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Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

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SYDNEY 277-289 Woodpark Road Smeeth NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

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Ph: 07 4796 0600 E: townsville.environment@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: AECOM Australia Pty Ltd

OFFICE:

PROJECT:

ORDER NUMBER: 60537182

PROJECT MANAGER: Averyll Coyne

SAMPLER: JM

COC emailed to ALS? (YES / NO)

Email Reports to: Averyll.coyne@Aecom.com dugald.cunningham@Aecom.com

Email Invoice to: Averyll.Coyne@Aecom.com

TURNAROUND REQUIREMENTS :

(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

ALS QUOTE NO.:

Standard TAT (List due date):

Non Standard or urgent TAT (List due date):

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

CONTACT PH: 0499 252 502

SAMPLER MOBILE:

EDD FORMAT (or default):

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

12/4 10:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS				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
	MATRIX/SOLID(S)/WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below	(refer to)	TOTAL CONTAINERS	Metals + pH	TRH(C6-C40)	BTEXN	TOXEL	PAHs	VSOC	PERCHLOR	HOLD		
11	GW72 0.05	10/04/17	S	n/a		2J								X		
12	GW72 0.50	10/04/17	S	n/a		2J								X		
13	GW72 0.70	10/04/17	S	n/a		2J								X		
14	GW72 1.00	11/04/17	S	n/a		2J								X		
15	GW72 1.50	10/04/17	S	n/a		2J								X		
16	GW69 0.05	11/04/17	S	n/a		2J								X		
17	GW69 0.50	11/04/17	S	n/a		2J								X		
18	GW69 1.00	11/04/17	S	n/a		2J								X		
19	GW69 1.50	11/04/17	S	n/a		2J								X		
20	GW70 0.20	11/04/17	S	n/a		2J								X		
21	GW70 0.50	11/04/17	S	n/a		2J	X	X	X		X			X	Metals: As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg.	
22	GW70 0.80	11/04/17	S	n/a		2J								X		
						TOTAL										

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; F = 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 Sulphate Spills; B = Unpreserved Bag.



CHAIN OF CUSTODY

ALS Laboratory
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DADELAIDE 21 Burns Road Pooraka SA 5095
Ph: 08 5394 0500 E: adelaide@alsglobal.com
BRISBANE 32 Strand Street Stalford QLD 4053
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NOWRA 4/13 Garry Place North Nowra NSW 2541
Ph: 024423 2053 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090
Ph: 08 9200 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2184
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TOWNSVILLE 14-15 Deanna Court Behva QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WONGONG 89 Kenny Street Wollongong NSW 2550
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: AECOM Australia Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7
OFFICE:		Standard TAT may be longer for some tests e.g. Ultra Trace Organics <input type="checkbox"/> Non Standard or urgent TAT (List due date):		
PROJECT:		ALS QUOTE NO.:		
ORDER NUMBER: 60537182				
PROJECT MANAGER: Averyll Coyne		CONTACT PH: 0499 252 502		
AMPLER: JM		SAMPLER MOBILE:		RELINQUISHED BY:
OC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY:
Email Reports to: Averyll.coyne@Aecom.com dugald.cunningham@Aecom.com		DATE/TIME: 12/4/17		RELINQUISHED BY:
Email Invoice to: Averyll.Coyne@aceom.com				RECEIVED BY:
				DATE/TIME: 12/4 10:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below (refer to)	TOTAL CONTAINERS	Metals + pH	TRH(C6-C40)	BTEXN	PCB	PAHs	PCB	PCB	HOLD	Additional Information
	23 GW70 1.00	11/04/17	S	n/a	2J								X	
	24 GW52 1.50	11/04/17	S	n/a	2J								X	
	25 GW52 0.05	11/04/17	S	n/a	2J								X	
	26 GW52 0.50	11/04/17	S	n/a	2J	X	X	X		X			X	Metals: As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg.
	27 GW52 0.70	11/04/17	S	n/a	2J								X	
	28 GW51 1.00	11/04/17	S	n/a	2J								X	
	29 GW51 1.50	11/04/17	S	n/a	2J								X	
	30 GW51 0.05	11/04/17	S	n/a	2J								X	
	31 GW51 0.50	11/04/17	S	n/a	2J								X	
	32 GW61 1.00	11/04/17	S	n/a	2J								X	
	33 GW61 1.50	11/04/17	S	n/a	2J								X	
	34 GW61 0.05	11/04/17	S	n/a	2J								X	
	TOTAL													

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



CHAIN OF CUSTODY

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MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com

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Ph: 07 4796 0600 E: townsville.environment@alsglobal.com

WOLLONGONG 98 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: parkentia@alsglobal.com

CLIENT: AECOM Australia Pty Ltd

OFFICE: Melbourne

PROJECT:

ORDER NUMBER: 60537182

PROJECT MANAGER: Averyll Coyne

SAMPLER: JM

COC emailed to ALS? (YES / NO)

Email Reports to: Averyll.coyne@Aecom.com dugald.cunningham@Aecom.com

Email Invoice to: Averyll.Coyne@Aecom.com

TURNAROUND REQUIREMENTS :

(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

Standard TAT (List due date):

Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OP: 1 2 3 4 5 6 7

CONTACT PH: 0499 252 502

SAMPLER MOBILE:

EDD FORMAT (or default):

RELINQUISHED BY: JTC

DATE/TIME: 12/4/17

RECEIVED BY:

DATE/TIME:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY: Morna (AM)

DATE/TIME: 12/11/17

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS		MATRIX	TYPE & PRESERVATIVE <i>codes below</i>	TOTAL CONTAINERS	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	Metals + pH	TRH(C6-C40)	BTEXN	PER	PAHs	VOC	ORGANICS	HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.		
	35	GW81 0.05	10/04/17	S	n/a	2J										X	
	36	GW81 0.50	10/04/17	S	n/a	2J										X	
	37	GW81 1.00	10/04/17	S	n/a	2J										X	
	38	GW81 1.50	10/04/17	S	n/a	2J										X	
	39	GW80 0.05	10/04/17	S	n/a	2J										X	
	40	GW80 0.50	10/04/17	S	n/a	2J										X	
	41	GW80 1.00	10/04/17	S	n/a	2J										X	
	42	GW80 1.50	10/04/17	S	n/a	2J										X	
	43	GW75 0.05	10/04/17	S	n/a	2J										X	
	44	GW75 0.50	10/04/17	S	n/a	2J										X	
	45	GW75 1.00	10/04/17	S	n/a	2J	X	X	X		X					X	Metals: As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se,
	46	GW75 1.50	10/04/17	S	n/a	2J										X	Hg
	TOTAL																

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Extra Samples:



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Townsville: 14-15 Osgood Cl, Bohle QLD 4816
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Adelaide: 2-1 Burma Rd, Paraika SA 5095
Ph 08 8330 0880 E: adelaide@alsenviro.com

Perth: 10 Had Way, Malaga WA 6060
Ph 08 9299 7656 E: samples.perth@alsenviro.com
Launceston: 27 Wellington St, Launceston TAS 7250
Ph 03 6331 2158 E: launceston@alsenviro.com

CLIENT: AECOM Australia Pty Ltd.		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle) Stability Seal Intact? <input type="checkbox"/> Free of Leaks? <input type="checkbox"/> Random Sample Temperature? <input type="checkbox"/> Other comments: _____	
OFFICE:		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics) <input type="checkbox"/> Non Standard or urgent TAT (List due date):			
PROJECT:		ALS QUOTE NO.:		COC SEQUENCE NUMBER (Circle)	
ORDER NUMBER: 60537182				COC: 1 2 3 4 5 6 7	
PROJECT MANAGER: Averyll Coyne		CONTACT PH:		OF: 1 2 3 4 5 6 7	
SAMPLER: JM		SAMPLER MOBILE:		RELINQUISHED BY: _____	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY: _____	
Email Reports to (will default to PM if no other addresses are listed):		DATE/TIME:		DATE/TIME:	
Email Invoice to (will default to PM if no other addresses are listed):		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) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).							Additional Information		
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES										Comments on likely contaminant levels, dilutions, or samples requiring specific QI analysis etc.
47	M1052-1.00	11/4/17		2x250ml Soil jar											
48	M1070-1.50	"		"											
49	VA01	"		"											
50	VA02	"		"											

TOTAL

CERTIFICATE OF ANALYSIS

Work Order : **EM1704688**
Client : **AECOM Australia Pty Ltd**
Contact : **MS AVERYLL COYNE**
Address : **COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET
MELBOURNE VIC, AUSTRALIA 3000**
Telephone : **+61 03 9653 1234**
Project : **60537182**
Order number : **60537182**
C-O-C number : **----**
Sampler : **J MULLER**
Site : **Fishermens Bend**
Quote number : **ME/199/16**
No. of samples received : **27**
No. of samples analysed : **3**

Page : 1 of 7
Laboratory : Environmental Division Melbourne
Contact : Carol Walsh
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9608
Date Samples Received : 13-Apr-2017 10:15
Date Analysis Commenced : 20-Apr-2017
Issue Date : 26-Apr-2017 15:54



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Eric Chau	Metals Team Leader	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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020F: Results for EM1704688-025 have been confirmed by re-preparation 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID			GW82_0.50	----	----	----	----
		Client sampling date / time			12-Apr-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1704688-022	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%	5.6	----	----	----	----	----
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	1920	----	----	----	----	----
Iron	7439-89-6	50	mg/kg	4590	----	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	6	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	16	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	44	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	12	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	56	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	0.1	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID			GW82_0.50	----	----	----	----
Client sampling date / time		12-Apr-2017 00:00			----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704688-022	-----	-----	-----	-----	
				Result	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----	
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----	
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----	
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----	
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----	
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	94.4	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	85.3	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	87.8	----	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	99.9	----	----	----	----	
Anthracene-d10	1719-06-8	0.5	%	103	----	----	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	88.8	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW82_0.50	----	----	----	----
Client sampling date / time				12-Apr-2017 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704688-022	-----	-----	-----	-----	
				Result	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	95.8	----	----	----	----	
Toluene-D8	2037-26-5	0.2	%	98.2	----	----	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	117	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC_06	QC_07	----	----	----
Client sampling date / time				12-Apr-2017 00:00	12-Apr-2017 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704688-025	EM1704688-026	-----	-----	-----	
				Result	Result	----	----	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.002	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.020	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----	
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	----	----	----	
EP080: BTEXN									
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	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	104	104	----	----	----	
Toluene-D8	2037-26-5	2	%	88.8	86.8	----	----	----	
4-Bromofluorobenzene	460-00-4	2	%	90.1	86.9	----	----	----	



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
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	: EM1704688	Page	: 1 of 9
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 13-Apr-2017
Order number	: 60537182	Date Analysis Commenced	: 20-Apr-2017
C-O-C number	: ----	Issue Date	: 26-Apr-2017
Sampler	: J MULLER		
Site	: Fishermens Bend		
Quote number	: ME/199/16		
No. of samples received	: 27		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Eric Chau	Metals Team Leader	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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 848027)									
EB1707745-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	7.3	7.5	2.59	No Limit
EM1704448-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	33.4	31.2	6.58	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 849213)									
EM1704688-022	GW82_0.50	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	5	29.3	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	8	35.7	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	11	39.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	44	29	39.5	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	56	37	40.5	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	1920	1820	5.35	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	4590	4270	7.11	0% - 20%
EM1704937-011	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	20	5.72	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	7	7	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	8	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	9	11.5	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	7	7	0.00	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	11700	13600	15.4	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	13500	12700	6.29	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 849214)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 849214) - continued										
EM1704688-022	GW82_0.50	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.00	No Limit	
EM1704937-011	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 849317)										
EM1704688-022	GW82_0.50	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	0.8	47.5	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	0.9	60.8	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	0.9	59.5	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	0.6	0.00	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EM1704879-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 846861)										
EM1704688-022	GW82_0.50	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 849318)										



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 849318) - continued										
EM1704688-022	GW82_0.50	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
EM1704879-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 846861)										
EM1704688-022	GW82_0.50	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 849318)										
EM1704688-022	GW82_0.50	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
EM1704879-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
EP080: BTEXN (QC Lot: 846861)										
EM1704688-022	GW82_0.50	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
	EP080: Naphthalene	91-20-3	1	mg/kg	<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 (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 849533)									
EM1704889-005	Anonymous	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	<0.001	<0.001	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	76.4	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.012	0.013	8.48	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



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: 849533) - continued										
EM1704889-005	Anonymous	EG020A-F: Iron	7439-89-6	0.05	mg/L	1.34	1.34	0.00	0% - 20%	
EM1704688-025	QC_06	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	<0.001	<0.001	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	0.002	0.00	No Limit	
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit	
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit	
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.020	0.020	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	<0.05	<0.05	0.00	No Limit	
EG035F: Dissolved Mercury by FIMS (QC Lot: 849534)										
EM1704688-025	QC_06	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 846568)										
EM1704881-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	1500	1630	8.12	0% - 20%	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 846568)										
EM1704881-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	1230	1320	7.30	0% - 20%	
EP080: BTEXN (QC Lot: 846568)										
EM1704881-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	821	811	1.30	0% - 20%	
		EP080: Toluene	108-88-3	2	µg/L	12	12	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	7	7	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	45	43	4.76	0% - 20%	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	17	16	7.18	No Limit	
EP080: Naphthalene	91-20-3	5	µg/L	12	12	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: **SOIL**

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	
EG005T: Total Metals by ICP-AES (QCLot: 849213)									
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	6134 mg/kg	101	93	115	
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	94.5	79	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	96.1	85	109	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	104	89	113	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	97.3	84	116	
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	104	95	109	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.2	85	107	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	105	89	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	94.0	93	109	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	102	89	111	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 849214)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	92.3	85	103	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 849317)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	110	80	121	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	102	70	130	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	108	80	120	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	110	70	124	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	102	80	122	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	90.6	80	126	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	102	70	128	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	101	80	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	91.6	70	130	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	96.7	80	126	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	94.5	70	124	
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	102	75	125	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	93.9	65	125	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	96.6	65	128	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	94.3	65	126	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	101	65	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 846861)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	102	70	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 849318)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	734 mg/kg	92.7	65	131	



Sub-Matrix: **SOIL**

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	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 849318) - continued									
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3091 mg/kg	98.4	70	126	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1507 mg/kg	100	70	122	
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846861)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	101	68	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 849318)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1101 mg/kg	91.4	68	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3914 mg/kg	98.8	72	116	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	283 mg/kg	103	38	132	
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080: BTEXN (QCLot: 846861)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	92.4	74	124	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	100	77	125	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	100	73	125	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	108	77	128	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	109	81	128	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	96.8	66	130	

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	
EG020F: Dissolved Metals by ICP-MS (QCLot: 849533)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	100	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.5	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	102	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.4	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.8	87	107	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.9	87	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.4	87	109	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	97.9	87	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.4	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	101	94	106	
EG035F: Dissolved Mercury by FIMS (QCLot: 849534)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	100	88	117	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 846568)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	108	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846568)									



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	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846568) - continued									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	106	65	125	
EP080: BTEXN (QCLot: 846568)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	94.0	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	101	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	99.4	72	124	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	107	72	130	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	105	78	128	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	90.9	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: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
					Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 849213)							
EM1704934-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	84.1	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.9	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	87.2	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	89.5	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	85.2	76	124
		EG005T: Nickel	7440-02-0	50 mg/kg	91.5	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	76.4	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	90.2	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 849214)							
EM1704934-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	106	76	116
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 849317)							
EM1704724-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	94.9	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	90.1	52	148
EP080/071: Total Petroleum Hydrocarbons (QCLot: 846861)							
EM1704753-002	Anonymous	EP080: C6 - C9 Fraction	----	28 mg/kg	92.1	42	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 849318)							
EM1704724-003	Anonymous	EP071: C10 - C14 Fraction	----	734 mg/kg	104	53	123
		EP071: C15 - C28 Fraction	----	3091 mg/kg	97.9	70	124
		EP071: C29 - C36 Fraction	----	1507 mg/kg	97.8	64	118



Sub-Matrix: **SOIL**

				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 Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846861)							
EM1704753-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	91.7	39	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 849318)							
EM1704724-003	Anonymous	EP071: >C10 - C16 Fraction	----	1101 mg/kg	97.9	65	123
		EP071: >C16 - C34 Fraction	----	3914 mg/kg	97.4	67	121
		EP071: >C34 - C40 Fraction	----	283 mg/kg	100	44	126
EP080: BTEXN (QCLot: 846861)							
EM1704753-002	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	105	50	136
		EP080: Toluene	108-88-3	2 mg/kg	110	56	139

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
EG020F: Dissolved Metals by ICP-MS (QCLot: 849533)							
EM1704688-025	QC_06	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	93.9	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	103	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	91.9	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	96.4	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	92.9	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	95.0	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	96.2	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 849534)							
EM1704905-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	86.9	70	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 846568)							
EM1704688-025	QC_06	EP080: C6 - C9 Fraction	----	280 µg/L	68.4	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846568)							
EM1704688-025	QC_06	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	64.6	44	122
EP080: BTEXN (QCLot: 846568)							
EM1704688-025	QC_06	EP080: Benzene	71-43-2	20 µg/L	81.2	68	130
		EP080: Toluene	108-88-3	20 µg/L	82.5	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1704688	Page	: 1 of 7
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 13-Apr-2017
Site	: Fishermens Bend	Issue Date	: 26-Apr-2017
Sampler	: J MULLER	No. of samples received	: 27
Order number	: 60537182	No. of samples analysed	: 3

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.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



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: **SOIL**

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
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103) GW82_0.50	12-Apr-2017	----	----	----	20-Apr-2017	26-Apr-2017	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) GW82_0.50	12-Apr-2017	21-Apr-2017	09-Oct-2017	✓	24-Apr-2017	09-Oct-2017	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) GW82_0.50	12-Apr-2017	21-Apr-2017	10-May-2017	✓	24-Apr-2017	10-May-2017	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) GW82_0.50	12-Apr-2017	21-Apr-2017	26-Apr-2017	✓	23-Apr-2017	31-May-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) GW82_0.50	12-Apr-2017	20-Apr-2017	26-Apr-2017	✓	20-Apr-2017	26-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW82_0.50	12-Apr-2017	21-Apr-2017	26-Apr-2017	✓	21-Apr-2017	31-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) GW82_0.50	12-Apr-2017	20-Apr-2017	26-Apr-2017	✓	20-Apr-2017	26-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW82_0.50	12-Apr-2017	21-Apr-2017	26-Apr-2017	✓	21-Apr-2017	31-May-2017	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) GW82_0.50	12-Apr-2017	20-Apr-2017	26-Apr-2017	✓	20-Apr-2017	26-Apr-2017	✓

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) QC_06	12-Apr-2017	----	----	----	21-Apr-2017	09-Oct-2017	✓



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) QC_06	12-Apr-2017	----	----	----	24-Apr-2017	10-May-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) QC_06, QC_07	12-Apr-2017	20-Apr-2017	26-Apr-2017	✓	21-Apr-2017	26-Apr-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) QC_06, QC_07	12-Apr-2017	20-Apr-2017	26-Apr-2017	✓	21-Apr-2017	26-Apr-2017	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC_06, QC_07	12-Apr-2017	20-Apr-2017	26-Apr-2017	✓	21-Apr-2017	26-Apr-2017	✓



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: **SOIL**

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 Duplicates (DUP)							
Moisture Content	EA055-103	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	16	12.50	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-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	16	6.25	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-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	16	6.25	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-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	16	6.25	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-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	50.00	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 Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	16.67	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							
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	16.67	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
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	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. Mercury in solids are determined following an appropriate acid digestion. 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)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
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.
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)
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
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1704688

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 3
Order number	: 60537182	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermens Bend		
Sampler	: J MULLER		

Dates

Date Samples Received	: 13-Apr-2017 10:15	Issue Date	: 19-Apr-2017
Client Requested Due Date	: 27-Apr-2017	Scheduled Reporting Date	: 27-Apr-2017

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 3.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 27 / 3

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **For sample 'QC_06', TPH/BTEX has been requested; only VOC vials have been received and so only the volatile fraction of TPH (C6-C9) plus BTEX analysis (ALS suite W-18) has been booked in.**



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA001 pH (CaCl)	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-10 TRHVOC/PAH
EM1704688-001	12-Apr-2017 00:00	GW53_0.05	✓					
EM1704688-002	12-Apr-2017 00:00	GW53_0.50	✓					
EM1704688-003	12-Apr-2017 00:00	GW53_0.70	✓					
EM1704688-004	12-Apr-2017 00:00	GW53_1.00	✓					
EM1704688-005	12-Apr-2017 00:00	GW48_0.05	✓					
EM1704688-006	12-Apr-2017 00:00	GW48_0.50	✓					
EM1704688-007	12-Apr-2017 00:00	GW48_0.80	✓					
EM1704688-008	12-Apr-2017 00:00	GW48_1.00	✓					
EM1704688-009	12-Apr-2017 00:00	GW48_1.30	✓					
EM1704688-010	12-Apr-2017 00:00	GW48_1.50	✓					
EM1704688-011	12-Apr-2017 00:00	GW67_0.05	✓					
EM1704688-012	12-Apr-2017 00:00	GW67_0.50	✓					
EM1704688-013	12-Apr-2017 00:00	GW67_0.60	✓					
EM1704688-014	12-Apr-2017 00:00	GW67_1.00	✓					
EM1704688-015	12-Apr-2017 00:00	GW67_1.50	✓					
EM1704688-016	12-Apr-2017 00:00	GW43_0.05	✓					
EM1704688-017	12-Apr-2017 00:00	GW43_0.50	✓					
EM1704688-018	12-Apr-2017 00:00	GW43_1.00	✓					
EM1704688-019	12-Apr-2017 00:00	GW43_1.50	✓					
EM1704688-020	12-Apr-2017 00:00	GW82_0.05	✓					
EM1704688-021	12-Apr-2017 00:00	GW82_0.20	✓					
EM1704688-022	12-Apr-2017 00:00	GW82_0.50		✓	✓	✓	✓	✓
EM1704688-023	12-Apr-2017 00:00	GW82_1.00	✓					
EM1704688-024	12-Apr-2017 00:00	GW82_1.50	✓					
EM1704688-027	12-Apr-2017 00:00	GW53_1.50	✓					



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1704688

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 3
Order number	: 60537182	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermens Bend		
Sampler	: J MULLER		

Dates

Date Samples Received	: 13-Apr-2017 10:15	Issue Date	: 20-Apr-2017
Client Requested Due Date	: 27-Apr-2017	Scheduled Reporting Date	: 27-Apr-2017

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 3.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 27 / 3

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **For sample 'QC_06', TPH/BTEX has been requested; only VOC vials have been received and so only the volatile fraction of TPH (C6-C9) plus BTEX analysis (ALS suite W-18) has been booked in.**



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-10 TRH/OC/PAH
EM1704688-001	12-Apr-2017 00:00	GW53_0.05	✓				
EM1704688-002	12-Apr-2017 00:00	GW53_0.50	✓				
EM1704688-003	12-Apr-2017 00:00	GW53_0.70	✓				
EM1704688-004	12-Apr-2017 00:00	GW53_1.00	✓				
EM1704688-005	12-Apr-2017 00:00	GW48_0.05	✓				
EM1704688-006	12-Apr-2017 00:00	GW48_0.50	✓				
EM1704688-007	12-Apr-2017 00:00	GW48_0.80	✓				
EM1704688-008	12-Apr-2017 00:00	GW48_1.00	✓				
EM1704688-009	12-Apr-2017 00:00	GW48_1.30	✓				
EM1704688-010	12-Apr-2017 00:00	GW48_1.50	✓				
EM1704688-011	12-Apr-2017 00:00	GW67_0.05	✓				
EM1704688-012	12-Apr-2017 00:00	GW67_0.50	✓				
EM1704688-013	12-Apr-2017 00:00	GW67_0.60	✓				
EM1704688-014	12-Apr-2017 00:00	GW67_1.00	✓				
EM1704688-015	12-Apr-2017 00:00	GW67_1.50	✓				
EM1704688-016	12-Apr-2017 00:00	GW43_0.05	✓				
EM1704688-017	12-Apr-2017 00:00	GW43_0.50	✓				
EM1704688-018	12-Apr-2017 00:00	GW43_1.00	✓				
EM1704688-019	12-Apr-2017 00:00	GW43_1.50	✓				
EM1704688-020	12-Apr-2017 00:00	GW82_0.05	✓				
EM1704688-021	12-Apr-2017 00:00	GW82_0.20	✓				
EM1704688-022	12-Apr-2017 00:00	GW82_0.50		✓	✓	✓	✓
EM1704688-023	12-Apr-2017 00:00	GW82_1.00	✓				
EM1704688-024	12-Apr-2017 00:00	GW82_1.50	✓				
EM1704688-027	12-Apr-2017 00:00	GW53_1.50	✓				

ANZ
FQM - Generic Chain of Custody Form

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Q4AN(EV)-007-FM1

CONSULTANT: <u>Jacob Muller</u>		ADDRESS / OFFICE:		SAMPLER: <u>Jacob Muller</u>		Destination Laboratory	
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0409536240</u>		ALS	
PROJECT NUMBER & TASK COI: <u>60537182</u>		P.O. NO.:		PHONE:			
RESULTS REQUIRED (Date):		QUOTE NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
COOLER SEAL (circle appropriate)							
Intact: Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED: Yes No				Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.			
SAMPLE INFORMATION (note: S = Soil, W=Water)		CONTAINER INFORMATION					
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	<u>GW53-0.05</u>	<u>S</u>	<u>12/9/17</u>		<u>250ml Jar</u>	<u>1</u>	
	<u>GW53-0.50</u>						<u>X</u>
	<u>GW53-0.70</u>						
	<u>GW53-1.00</u>						
	<u>GW48-0.05</u>						
	<u>GW48-0.50</u>						
	<u>GW48-0.80</u>						
	<u>GW48-1.00</u>						
	<u>GW48-1.50</u>						
	<u>GW67-0.05</u>						
	<u>GW67-0.50</u>						
	<u>GW67-0.60</u>						
	<u>GW67-1.00</u>						
	<u>GW67-1.50</u>						
	<u>GW43-0.05</u>						
	<u>GW43-0.50</u>						
	<u>GW43-1.00</u>						
	<u>GW43-1.50</u>						
RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:	
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:	
Name: <u>Muller</u>		Name: <u>ALS</u>		Name: <u>ALS</u>		Date: <u>13/1/18</u>	
Of:		Of:		Of:		Time: <u>10:00</u>	

Environmental Division
 Melbourne
 Work Order Reference
EM1704688



Telephone : + 61-3-8649 9600

ANZ
FQM - Generic Chain of Custody Form

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Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: JACOB MULLER		Destination Laboratory	
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0409536240 PHONE:			
PROJECT NUMBER & TASK COI 60537182		P.O. NO.:		EMAIL REPORT TO:			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)		Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.	
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:					
COOLER SEAL (circle appropriate)							
Intact: Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED: Yes No							
SAMPLE INFORMATION (note: S = Soil, W=Water)						HOLD X Rinseate method method Rinseate method Tripel Blank	
CONTAINER INFORMATION							
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code		Total bottles
	GW82-0.05	S	12/14/17		250ml Jar		1
	GW82-0.20						
	GW82-0.50						
	GW82-1.00						
	GW82-1.30						
	GW82-1.50						
	QC-06						
	QC-07						
	QC-06						
	QC-07						
RELINQUISHED BY:						RECEIVED BY	
Name:		Date:		Name:			
Of:		Time:		Of:			
Name: MULLER		Date: 13/14		Name: ALI		METHOD OF SHIPMENT	
Of: ALI		Time: 10:13		Con' Note No:		Transport Co:	
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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.							

ANZ
FQM - Generic Chain of Custody Form

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Q4AN(EV)-007-FM1

CONSULTANT: <u>Jacob Miller</u>		ADDRESS / OFFICE:		SAMPLER: <u>Jacob Miller</u>		Destination Laboratory		
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0409532240</u> PHONE:		ALS		
PROJECT NUMBER & TASK COI <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>				
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)		<div style="text-align: center; font-size: 2em; opacity: 0.5;">SCANNED</div>						
Intact: Yes No N/A								
SAMPLE TEMPERATURE								
CHILLED: Yes No								
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION				HOLD X
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
	<u>GW53_0.05</u>	<u>S</u>	<u>12/1/17</u>		<u>250m Jar</u>	<u>1</u>		
	<u>GW53_0.50</u>							
	<u>GW53_0.70</u>							
	<u>GW53_1.00</u>							
	<u>GW48_0.05</u>							
	<u>GW48_0.50</u>							
	<u>GW48_0.80</u>							
	<u>GW48_1.00</u>							
	<u>GW48_1.30</u>							
	<u>GW48_1.50</u>							
	<u>GW67_0.05</u>							
	<u>GW67_0.50</u>							
	<u>GW67_0.60</u>							
	<u>GW67_1.00</u>							
	<u>GW67_1.50</u>							
	<u>GW43_0.05</u>							
	<u>GW43_0.50</u>							
	<u>GW43_1.00</u>							
	<u>GW43_1.50</u>							

Samples sent to lab for
 - Ammonia
 - BOD
 - pH
 - EC
 - TOC (#22)
 Date: 19/4 S-D

Environmental Division
Melbourne
Work Order Reference
EM1704688



Telephone : + 61-3-6549 9600

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name: <u>Manna</u>	Date: <u>13/4</u>	Con' Note No: Transport Co:	
Of:	Time:	Of:	Time:	Of: <u>ALS</u>	Time: <u>10:15</u>		

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag
 Soil Container Codes: Jar = Unpreserved glass jar

ANZ
FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: JACOB MULLER		Destination Laboratory					
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0409536240		PHONE:					
PROJECT NUMBER & TASK COI: 60537182		P.O. NO.:		EMAIL REPORT TO:							
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)							
FOR LABORATORY USE ONLY COOLER SEAL (circle appropriate) Intact: Yes No N/A SAMPLE TEMPERATURE CHILLED: Yes No		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:		Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.							
SAMPLE INFORMATION (note: S = Soil, W=Water)		CONTAINER INFORMATION									
ALS ID	SAMPLE ID	MATRIX	DATE					Time	Type / Code	Total bottles	HOLD
	GW82-0.05	S	12/4/17						250ml Jar	1	X
	GW82-0.20										
	GW82-0.50										
	GW82-1.00										
	GW82-1.30										
	GW82-1.50										
	QC-06										
	QC-07										
	QC-08										
	QC-07										
RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT					
Name:	Date:	Name:	Date:	Name: Monu	Date: 13/4	Con' Note No:					
Of:	Time:	Of:	Time:	Of: All	Time: 10:13	Transport Co:					

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
 Soil Container Codes: Jar = Unpreserved glass jar

Analysis rec'd 19/4/17 14:13 - ALG PR

ANC
FQM - Generic Chain of Custody Form

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CONSULTANT: <u>Torish Muller</u>		ADDRESS/OFFICE:		SAMPLER: <u>Torish Muller</u>		Destination Laboratory																	
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermans Bend</u>		MOBILE: <u>041 553 2240</u>		PHONE:																	
PROJECT NUMBER & TASK CODE: <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>		ALS																	
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)																			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL		<table border="1"> <tr> <td>COOLERS</td> <td>COOLERS</td> <td>COOLERS</td> <td>COOLERS</td> <td>COOLERS</td> <td>COOLERS</td> <td>COOLERS</td> <td>COOLERS</td> </tr> <tr> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> </table>		COOLERS	COOLERS	COOLERS	COOLERS	COOLERS	COOLERS	COOLERS	COOLERS	✓	✓	✓	✓	✓	✓	✓	✓	Notes: <input type="checkbox"/> Highly contaminated sample <input type="checkbox"/> High PCBs expected <input type="checkbox"/> Extra volume for GC or trace LORs etc.	
COOLERS	COOLERS	COOLERS	COOLERS	COOLERS	COOLERS	COOLERS	COOLERS																
✓	✓	✓	✓	✓	✓	✓	✓																
COOLER SEAL (where appropriate):																							
INITIALS: Yes No N/A																							
SAMPLE TEMPERATURE:																							
CHILLED: Yes No																							
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION																			
ALC ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
1	GW53 - 0.05	S	19/4/17		250ml Jar	1																	
2	GW53 - 0.50	S	19/4/17		250ml Jar	1																	
3	GW53 - 0.75																						
4	GW53 - 1.00																						
5	GW43 - 0.05																						
6	GW43 - 0.50																						
7	GW43 - 0.80																						
8	GW43 - 1.00																						
9	GW43 - 1.30																						
10	GW43 - 1.50																						
11	GW67 - 0.05																						
12	GW67 - 0.50																						
13	GW67 - 0.60																						
14	GW67 - 1.00																						
15	GW67 - 1.50																						
16	GW43 - 0.05																						
17	GW43 - 0.50																						
18	GW43 - 1.00																						
19	GW43 - 1.50																						

METALS: As, Cr, Cu, Fe, Pb, Ni, Zn, Hg
VOC CODE: EPO74

REMOVED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name:	Date:		
OS:	Time:	OS:	Time:	OS:	Time:		
Water Container Codes: P = Unpreserved Plastic, H = High Preserved Plastic, OPC = Nitric Preserved OPC, SH = Sodium Hydroxide/Cl Preserved, S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved, AP = Amber Glass Preserved		Con' Note No:		Date: <u>13/4</u>		Transport Co:	
Other Container Codes: P = Unpreserved Plastic, H = High Preserved Plastic, OPC = Nitric Preserved OPC, SH = Sodium Hydroxide/Cl Preserved, S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved, AP = Amber Glass Preserved		Con' Note No:		Date: <u>10/1</u>		Transport Co:	

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ANZ
FQM - Generic Chain of Custody Form

CONSULTANT		ADDRESS / OFFICE		SAMPLER: JACOB MULLER		Destination Laboratory		
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermans Bend		MOBILE: 0409536240		PHONE:		
PROJECT NUMBER & TASK CODE: 60537182		I.P.O. NO.:		EMAIL REPORT TO:				
RESULTS REQUIRED (DMM):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for OC or trace LORs etc.
COOLER SEAL (circle appropriate)								
Intact: Yes No N/A								
SAMPLE TEMPERATURE								
CHILLED: Yes No								
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
20	GW82-0.05	S	12/17/17		250ml jar	1		
21	GW82-0.20							
22	GW82-0.50							
23	GW82-1.00							
N.R.	GW82-1.30							
24	GW82-1.50							
25	QC-06							
26	QC-07							
Extra Sample:								
27	GW53-1.50	S			1x250ml Soil jar			
RELINQUISHED BY:				RECEIVED BY:				
Name:	Date:	Name:	Date:	Name:	Date:	METHOD OF SHIPMENT		
Of:	Time:	Of:	Time:	Of:	Time:	Con' Note No: Transport Co.:		


ANZ
FQM - Generic Chain of Custody Form

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Q4AN(EV)-007-FM1

CONSULTANT: <u>Jacob Muller</u>		ADDRESS / OFFICE:		SAMPLER: <u>Jacob Muller</u>		Destination Laboratory	
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0409532240</u>		ALC	
PROJECT NUMBER & TASK COI <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY COOLER SEAL (circle appropriate) Intact: Yes No N/A SAMPLE TEMPERATURE CHILLED: Yes No		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:		SCANNED			
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	<u>GW53_0.05</u>	<u>S</u>	<u>12/4/17</u>		<u>250m Jar</u>	<u>1</u>	<u>X</u>
	<u>GW53_0.50</u>						
	<u>GW53_0.70</u>						
	<u>GW53_1.00</u>						
	<u>GW48_0.05</u>						
	<u>GW48_0.50</u>						
	<u>GW48_0.80</u>						
	<u>GW48_1.00</u>						
	<u>GW48_1.30</u>						
	<u>GW48_1.50</u>						
	<u>GW67_0.05</u>						
	<u>GW67_0.50</u>						
	<u>GW67_0.60</u>						
	<u>GW67_1.00</u>						
	<u>GW67_1.50</u>						
	<u>GW43_0.05</u>						
	<u>GW43_0.50</u>						
	<u>GW43_1.00</u>						
	<u>GW43_1.50</u>						

Environmental Division
 Melbourne NP 19/4
 Work Order Reference
EM1704688



Telephone : +61-3-8549 9600

VOC (#22)
 19/4 S-D

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name: <u>Muller</u>	Date: <u>13/4</u>	Con' Note No:	
Of:	Time:	Of:	Time:	Of: <u>ALC</u>	Time: <u>10:15</u>	Transport Co:	

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
 Soil Container Codes: Jar = Unpreserved glass jar

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: JACOB MULLER		Destination Laboratory	
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0409536240 PHONE:			
PROJECT NUMBER & TASK COI: 60537182		P.O. NO.:		EMAIL REPORT TO:			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY COOLER SEAL (circle appropriate) Intact: Yes No N/A SAMPLE TEMPERATURE CHILLED: Yes No		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:		Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.			
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	GW82-0.05	S	12/14/17		250ml Jar	1	X
	GW82-0.20						
	GW82-0.50						
	GW82-1.00						
	GW82-1.30						
	GW82-1.50						
	QC-06						
	QC-07						
	QC-08						
	QC-07						
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name: Muller	Date: 13/14	Con' Note No: Transport Co:	
Of:	Time:	Of:	Time:	Of: AM	Time: 10:13		

Rinisate ~~method~~
~~method~~
~~method~~
 Tripel Blank

Analysis rec'd 19/4/17 14:13 - AUS PR

ANC
FQM - Generic Chain of Custody Form

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QAAN(EV)-007-FM5

CONSULTANT <i>Jesse Miller</i>		ADDRESS / OFFICE		SAMPLER <i>Jesse Miller</i>		Destination Laboratory	
PROJECT MANAGER (PM) <i>Averyll Coyne</i>		SITE <i>Fishermans Bend</i>		MOBILE <i>08 95362440</i>		PHONE	
PROJECT NUMBER & TASK CODE <i>60537482</i>		P.O. NO.		EMAIL REPORT TO <i>AVERYLL.COYNE</i>		ALS	
RESULTS REQUIRED (date)		QUOTE NO.		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL					
COOLER SEAL (circle appropriate)		Notes: <input type="checkbox"/> - Highly contaminated sample <input type="checkbox"/> - High PAHs expected Extra volume for GC or trace LOIs etc.					
Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> SAMPLE TEMPERATURE Filled: Yes <input type="checkbox"/> No <input type="checkbox"/>							
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	GW53-0.05	S	12/9/17		250ml Jar	1	
2	GW53-0.50						X
3	GW53-0.75						X
4	GW53-1.00						X
5	GW43-0.05						X
6	GW43-0.50						X
7	GW43-0.75						X
8	GW43-1.00						X
9	GW43-1.50						X
10	GW43-2.00						X
11	GW67-0.05						X
12	GW67-0.50						X
13	GW67-0.75						X
14	GW67-1.00						X
15	GW67-1.50						X
16	GW43-0.05						X
17	GW43-0.50						X
18	GW43-1.00						X
19	GW43-1.50						X

RELINQUISHED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:	
Signature	12/9/17	Signature	13/4/17	Signature	13/4/17	Transport Co:	

Water Container Codes: U = Unpreserved Plastic, N = Nitric Preserved Plastic, ORC = Nitric Preserved ORC, SH = Sodium Hydroxide Preserved, S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved, AP = Airtight Unpreserved Plastic, V = VOA Vol Vol Preserved, VB = VOA Vol Sodium Bicarbonate Preserved, VG = VOA Vol Sulfuric Preserved, AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass, H = HCl preserved Plastic, HS = HCl preserved Spillout bottle, SP = Sulfuric Preserved Plastic, C = Compendium Preserved Glass, Z = Zinc Acetate Preserved Bottle, F = EDTA Preserved Bottle, ST = Sterile Bottle, ASS = Plastic Bag for Acid Sulphate Soils, B = Unpreserved Bag, Soil Container Codes: Jar = Unpreserved glass jar

ANZ
FQM - Generic Chain of Custody Form

PAGE 2

CONSULTANT			ADDRESS / OFFICE			SAMPLER: JACOB MULLER			Destination Laboratory		
PROJECT MANAGER (PM): Averyll Coyne			SITE: Fishermans Bend			MOBILE: 0409536240			PHONE:		
PROJECT NUMBER & TASK COI: 60537182			I.P.O. NO.:			EMAIL REPORT TO:					
RESULTS REQUIRED (Date):			QUOTE NO.:			ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)					
FOR LABORATORY USE ONLY			COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL			PH TRH (C) (C) BTEX PAHs VOCs TRH (C) (C) H2O2 H2O			Notes: e.g. Highly contaminated sample e.g. "High" PAHs expected". Extra volume for QC or trace LORs etc.		
COOLER SEAL (circle appropriate)											
Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A											
SAMPLE TEMPERATURE:											
CHILLED: Yes <input type="checkbox"/> No <input type="checkbox"/>											
SAMPLE INFORMATION (note: S = Soil, W = Water)			CONTAINER INFORMATION								
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Cont.	Total bottles					
20	GW82-0.05	S	12/17		250ml jar	1					
21	GW82-0.20										
22	GW82-0.50										
23	GW82-1.00										
N.R.	GW82-1.30										
24	GW82-1.50										
25	QL-06										
	QL-07										
	QL-07										
26	QL-07										Sample Blank
Extra Sample:											
27	GW53-1.50	S			1x250ml Soil jar						
RELINQUISHED BY:			RECEIVED BY:			RECEIVED BY:			METHOD OF SHIPMENT:		
Name:		Date:	Name:		Date:	Name:		Date:	Con' Note No.:		
OS:		Time:	Of:		Time:	Of:		Time:	Transport Co.:		
Master Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cl ₂ Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VC = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Spediation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zn; Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Tails; B = Unpreserved Bag Soil Container Codes: Jar = Unpreserved glass jar											

ANZ
FQM - Generic Chain of Custody Form

PAGE 1

CONSULTANT: Jacob Muller		ADDRESS / OFFICE:		SAMPLER: Jacob Muller		Destination Laboratory	
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 040 9536240		ALS	
PROJECT NUMBER & TASK CODE: 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:					
COOLER SEAL (circle appropriate)		SCANNED					
Intact: Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED: Yes No		Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.					
SAMPLE INFORMATION (note: S = Spill, W=Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	GW53_0.05	S	12/4/17		250m Jar	1	X
	GW53_0.50						
	GW53_0.70						
	GW53_1.00						
	GW48_0.05						
	GW48_0.50						
	GW48_0.80						
	GW48_1.00						
	GW48_1.30						
	GW48_1.50						
	GW67_0.05						
	GW67_0.50						
	GW67_0.60						
	GW67_1.00						
	GW67_1.50						
	GW43_0.05						
	GW43_0.50						
	GW43_1.00						
	GW43_1.50						
RELINQUISHED BY:				RECEIVED BY			
Name:	Date:	Name:	Date:	RECEIVED BY		METHOD OF SHIPMENT	
Of:	Time:	Of:	Time:	Name: Morgan	Date: 13/17	Con' Note No:	
				Of: ALS	Time: 10:13	Transport Co:	

Environmental Division
 Melbourne NP 19/4
 Work Order Reference
EM1704688



Telephone : + 61-3-8549 9600

VOC (#22)
 19/4 S-D

ANZ
FQM - Generic Chain of Custody Form

CONSULTANT:			ADDRESS / OFFICE:			SAMPLER: JACOB MULLER			Destination Laboratory		
PROJECT MANAGER (PM): Averyll Coyne			SITE: Fishermens Bend			MOBILE: 0409536240			PHONE:		
PROJECT NUMBER & TASK COI 60537182			P.O. NO.:			EMAIL REPORT TO:					
RESULTS REQUIRED (Date):			QUOTE NO.:			ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)					
FOR LABORATORY USE ONLY			COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.		
COOLER SEAL (circle appropriate)											
Intact: Yes No N/A											
SAMPLE TEMPERATURE											
CHILLED: Yes No											
SAMPLE INFORMATION (note: S = Soil, W=Water)						CONTAINER INFORMATION					
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles					HOLD
	GW82-0.05	S	12/4/17		250ml Jar	1					X
	GW82-0.20										
	GW82-0.50										
	GW82-1.00										
	GW82-1.30										
	GW82-1.50										
	QC-06										
	QC-07										
	QC-06										
	QC-07										
RELINQUISHED BY:			RECEIVED BY			RECEIVED BY			METHOD OF SHIPMENT		
Name:		Date:	Name:		Date:	Name: Muller		Date: 13/1/18	Con' Note No:		
Of:		Time:	Of:		Time:	Of: AM		Time: 10:15	Transport Co:		
<p>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</p> <p>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;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.</p> <p style="text-align: right;">Soil Container Codes: Jar = Unpreserved glass jar</p>											

~~Rinsate~~
~~Rinsate~~
~~Rinsate~~
 Tripel Blank

QCM - Generic Chain of Custody Form

PAGE 1

Q4AN(EV)007-FM5

CONSULTANT: <u>Travis Miller</u>		ADDRESS / OFFICE:		SAMPLER: <u>Travis Miller</u>		Destination Laboratory	
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>011 9536240</u>		ALS	
PROJECT NUMBER & TASK CODE: <u>605371R2</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVYRILL COYNE</u>			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY:		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:				Notes: <input type="checkbox"/> Highly contaminated sample e.g. High PAHs expected Extra volume for GC or trace LORs etc.	
COOLER SEAL (circle appropriate): Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>							
SAMPLE TEMPERATURE: CHILLED: Yes <input type="checkbox"/> No <input type="checkbox"/>							
SAMPLE INFORMATION (note: S = Soil, W = Water)		CONTAINER INFORMATION					
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	GW53-0.05	S	12/4/19		250ml Jar	1	
2	GW57-0.05						X
3	GW57-0.20						X
4	GW57-1.00						X
5	GW49-0.05						X
6	GW49-0.20						X
7	GW49-0.80						X
8	GW49-1.00						X
9	GW43-0.05						X
10	GW43-0.20						X
11	GW67-0.05						X
12	GW67-0.50						X
13	GW67-0.60						X
14	GW67-1.00						X
15	GW43-0.05						X
16	GW43-0.20						X
17	GW43-0.50						X
18	GW43-1.00						X
19	GW43-1.50						X

Notes: Highly contaminated sample
e.g. High PAHs expected
Extra volume for GC or trace LORs etc.

Metals: As, Cd, Cr, Cu, Pb, Ni, Zn, Ag, Fe, Se, Hg

VOC CODE: EPA 74

RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No.:	
Ch:	Time:	Ch:	Time:	Ch:	Time:	Transport Co.:	

Water Container Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, ORC = Nitric Preserved ORC, SH = Sodium Hydroxide/Cl Preserved, S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved, AP = Airfreight Unpreserved Plastic
 V = VOA Vol HCl Preserved, VB = VOA Vol Sodium Bicarbonate Preserved, VS = VOA Vol Sulfuric Preserved, AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass, H = HCl Preserved Plastic, HC = HCl Preserved Speciation Bottle, SP = Sulfuric Preserved Plastic
 C = Compositable Preserved Glass, C2 = Two Comp Main Preserved Bottle, C3 = EDTA Preserved Bottle, ST = Sterile Bottle, ASS = Plastic Bag for Acid Sulphate Soils, B = Unpreserved Bag
 Soil Container Codes: J3 = Unpreserved glass jar

ANZ
FCM - Generic Chain of Custody Form

PAGE 2

CONSULTANT		ADDRESS / OFFICE		SAMPLER		Destination Laboratory		
PROJECT MANAGER (PM) Averyll Coyne		SITE Fishermans Bend		MOBILE 0409536240		PHONE		
PROJECT NUMBER & TASK NO: 60537482		I.P.O. NO.:		EMAIL REPORT TO:				
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected" Extra volume for OC or trace LORs etc.
COOLER SEAL (circle appropriate) Intact Yes No N/A								
SAMPLE TEMPERATURE CANNED Yes No								
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Cont.	Total bottles		
20	GW82-0.05	S	12/17		250ml jar	1		
21	GW82-0.20							
22	GW82-0.50							
23	GW82-1.00							
N.R.	GW82-1.30							
24	GW82-1.50							
25	QC-06							
	QC-07							
	QC-08							
26	QC-07							
Extra Sample:								
27	GW53-1.50	S			1x250ml Soil jar			
RELINQUISHED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT		
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:		
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:		

METALS
PH
TRA (Cu, Cd)
PTEK
DEHS
VOCs
TRA (Cu, Cd)
HOLD
HCO

~~QC-06~~
~~QC-07~~
~~QC-08~~
Tripel Blank

Peter Ravlic

From: Coyne, Averyll <Averyll.Coyne@aecom.com>
Sent: Thursday, 20 April 2017 2:00 PM
To: Peter Ravlic
Subject: Re: EM1704688 - AECOMAU - 60537182

Hi Peter,

I have just seen the copy of the COC. Our apologies for the quality. It is not good enough. I am unsure how that has happened.

I acknowledge that GW82_1.30 was not received. Thanks for letting me know.

Yes, please hold 027.

Agreed on analysis of 025.

(027)
Re GW82_0.50 please do not analyse for VOC and pH due to the holding time breach.

Thank you.
Averyll

From: Peter Ravlic <peter.ravlic@alsglobal.com>
Sent: Thursday, 20 April 2017 11:06:14 AM
To: Coyne, Averyll
Subject: FW: EM1704688 - AECOMAU - 60537182

Hi Averyll

In relation to the attached COC (Please note that the attached COC with analysis is very hard to read)

- We didn't receive sample 'GW82_1.30'.
- We received 1 x extra sample:
(027) GW53_1.50, 1 x 250 mL jar – this sample is currently on hold.
- For sample 025, we received 2 x vials + 1 x filtered red metals bottle – TPH/BTEXN/Metals were requested. We will analyse for W-18 plus metals.

Also just letting you know that for sample GW82_0.50, the VOC's and pH were not able to be processed within holding time yesterday which was on the last day of holding time so this analysis has been organized this morning

Thanks

Regards,

Regards

Peter Ravlic

Client Services Officer – Springvale

Environmental



T +61 3 8549 9600
F +61 3 8549 9626
Peter.Ravlic@alsglobal.com
2-4 Westall Rd
Springvale Vic 3171
Australia

pH

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CERTIFICATE OF ANALYSIS

Work Order : **EM1704753**
Client : **AECOM Australia Pty Ltd**
Contact : **MS AVERYLL COYNE**
Address : **COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET
MELBOURNE VIC, AUSTRALIA 3004**
Telephone : **+61 03 9653 1234**
Project : **60537182**
Order number : **Task 3.4**
C-O-C number : **----**
Sampler : **JACOB MULLER**
Site : **Fishermens Bend**
Quote number : **EN/004/16**
No. of samples received : **25**
No. of samples analysed : **3**

Page : 1 of 9
Laboratory : Environmental Division Melbourne
Contact : Carol Walsh
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9608
Date Samples Received : 18-Apr-2017 09:00
Date Analysis Commenced : 19-Apr-2017
Issue Date : 24-Apr-2017 17:15



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID			GW47_0.50	----	----	----	----
		Client sampling date / time			13-Apr-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1704753-002	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	5.4	----	----	----	----	----
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%	<1.0	----	----	----	----	----
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	150	----	----	----	----	----
Iron	7439-89-6	50	mg/kg	160	----	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	<2	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	<5	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	<5	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	----	----	----	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	----	----	----	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	----	----	----	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	----	----	----	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	----	----	----	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	----	----	----	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	----	----	----	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	----	----	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	<5	----	----	----	----	----
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	----	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	----	----	----	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	----	----	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	----	----	----	----	----
EP074D: Fumigants									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW47_0.50	----	----	----	----
Client sampling date / time				13-Apr-2017 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704753-002	-----	-----	-----	-----	
				Result	----	----	----	----	
EP074D: Fumigants - Continued									
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	----	----	----	----	
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	----	----	----	----	
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	----	----	----	----	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	----	----	----	----	
Chloromethane	74-87-3	5	mg/kg	<5	----	----	----	----	
Vinyl chloride	75-01-4	5	mg/kg	<5	----	----	----	----	
Bromomethane	74-83-9	5	mg/kg	<5	----	----	----	----	
Chloroethane	75-00-3	5	mg/kg	<5	----	----	----	----	
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	----	----	----	----	
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	----	----	----	----	
Iodomethane	74-88-4	0.5	mg/kg	<0.5	----	----	----	----	
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	----	----	----	----	
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	----	----	----	----	
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	----	----	----	----	
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	----	----	----	----	
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	----	----	----	----	
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	----	----	----	----	
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	----	----	----	----	
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	----	----	----	----	
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	----	----	----	----	
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	----	----	----	----	
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	----	----	----	----	
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	----	----	----	----	
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	----	----	----	----	
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	----	----	----	----	
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	----	----	----	----	
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	----	----	----	----	
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	----	----	----	----	
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW47_0.50	----	----	----	----
Client sampling date / time				13-Apr-2017 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704753-002	-----	-----	-----	-----	
				Result	----	----	----	----	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	----	----	----	----	
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	----	----	----	----	
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	----	----	----	----	
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	----	----	----	----	
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	----	----	----	----	
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	----	----	----	----	
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	----	----	----	----	
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	----	----	----	----	
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg	<0.5	----	----	----	----	
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	----	----	----	----	
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	----	----	----	----	
Bromoform	75-25-2	0.5	mg/kg	<0.5	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(b+j)fluoranthene	205-99-2	205-82-3	0.5	mg/kg	<0.5	----	----	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID			GW47_0.50	----	----	----	----
Client sampling date / time		13-Apr-2017 00:00			----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704753-002	-----	-----	-----	-----	
				Result	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----	
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----	
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----	
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----	
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----	
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	88.3	----	----	----	----	
Toluene-D8	2037-26-5	0.5	%	88.3	----	----	----	----	
4-Bromofluorobenzene	460-00-4	0.5	%	94.2	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	108	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	103	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	71.6	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW47_0.50	---	---	---	---
Client sampling date / time				13-Apr-2017 00:00	---	---	---	---	
Compound	CAS Number	LOR	Unit	EM1704753-002	-----	-----	-----	-----	
				Result	---	---	---	---	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	98.0	---	---	---	---	
Anthracene-d10	1719-06-8	0.5	%	106	---	---	---	---	
4-Terphenyl-d14	1718-51-0	0.5	%	74.9	---	---	---	---	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	79.8	---	---	---	---	
Toluene-D8	2037-26-5	0.2	%	81.2	---	---	---	---	
4-Bromofluorobenzene	460-00-4	0.2	%	106	---	---	---	---	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC08	QC09	----	----	----
Client sampling date / time				13-Apr-2017 00:00	13-Apr-2017 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704753-024	EM1704753-025	-----	-----	-----	
				Result	Result	----	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----	----
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	----	----	----	----
EP080: BTEXN									
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	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	86.1	93.9	----	----	----	----
Toluene-D8	2037-26-5	2	%	72.9	81.9	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	99.8	109	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	62	122
Toluene-D8	2037-26-5	64	120
4-Bromofluorobenzene	460-00-4	66	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124
Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
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	: EM1704753	Page	: 1 of 13
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 18-Apr-2017
Order number	: Task 3.4	Date Analysis Commenced	: 19-Apr-2017
C-O-C number	: ----	Issue Date	: 24-Apr-2017
Sampler	: JACOB MULLER		
Site	: Fishermens Bend		
Quote number	: EN/004/16		
No. of samples received	: 25		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 847011)									
EM1704688-022	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	6.3	6.4	1.57	0% - 20%
EM1704877-001	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	5.8	5.9	1.71	0% - 20%
EA055: Moisture Content (QC Lot: 847244)									
EM1704753-002	GW47_0.50	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	<1.0	<1.0	0.00	No Limit
EM1704833-012	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	33.2	36.7	10.1	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 846920)									
EM1704679-014	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	58	58	0.00	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	36	35	3.29	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	9	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	17	16	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	13	8.20	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	34	35	0.00	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	42500	41700	2.05	0% - 20%
EM1704730-002	Anonymous	EG005T: Iron	7439-89-6	50	mg/kg	43600	43600	0.00	0% - 20%
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	21	26	19.8	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	94	102	7.89	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	31	9.74	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	22	51.9	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	67	76	12.3	0% - 50%



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 846920) - continued									
EM1704730-002	Anonymous	EG005T: Aluminium	7429-90-5	50	mg/kg	6330	7300	14.1	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	35100	38600	9.47	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 846921)									
EM1704730-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 846860)									
EM1704688-022	Anonymous	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 846860)									
EM1704688-022	Anonymous	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 846860)									
EM1704688-022	Anonymous	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074D: Fumigants (QC Lot: 846860)									
EM1704688-022	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 846860)									
EM1704688-022	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				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: 846860) - continued									
EM1704688-022	Anonymous	EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 846860)									
EM1704688-022	Anonymous	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 846860)									
EM1704688-022	Anonymous	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 846899)									
EM1704753-002	GW47_0.50	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 846899) - continued									
EM1704753-002	GW47_0.50	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EM1704794-025	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5
EP075(SIM): Acenaphthylene	208-96-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Acenaphthene	83-32-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Fluorene	86-73-7			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Phenanthrene	85-01-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Anthracene	120-12-7			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Fluoranthene	206-44-0			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Pyrene	129-00-0			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Benz(a)anthracene	56-55-3			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Chrysene	218-01-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Benzo(k)fluoranthene	207-08-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Benzo(a)pyrene	50-32-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 846861)									
EM1704688-022	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 846898)									
EM1704753-002	GW47_0.50	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EM1704794-025	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 846861)									
EM1704688-022	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 846898)										
EM1704753-002	GW47_0.50	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
EM1704794-025	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	150	<100	38.7	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	150	<50	100	No Limit	
EP080: BTEXN (QC Lot: 846861)										
EM1704688-022	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
	EP080: Naphthalene	91-20-3		1	mg/kg	<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 (%)
EG020T: Total Metals by ICP-MS (QC Lot: 845690)									
EM1704628-058	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.01	0.02	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
	EG020A-T: Iron	7439-89-6		0.05	mg/L	<0.05	<0.05	0.00	No Limit
EM1704776-100	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.02	0.02	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
	EG020A-T: Iron	7439-89-6		0.05	mg/L	<0.05	<0.05	0.00	No Limit

EG035T: Total Recoverable Mercury by FIMS (QC Lot: 846600)



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 (%)	
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 846600) - continued										
EM1704753-024	QC08	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
EM1704849-005	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 846567)										
EM1704751-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EM1704874-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	3790	# 4870	24.8	0% - 20%	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 846567)										
EM1704751-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EM1704874-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	4890	# 6160	23.1	0% - 20%	
EP080: BTEXN (QC Lot: 846567)										
EM1704751-001	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	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	
EM1704874-004	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
		EP080: Benzene	71-43-2	1	µg/L	118	115	2.90	0% - 20%	
		EP080: Toluene	108-88-3	2	µg/L	10	9	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	830	775	6.79	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	96	98	3.14	0% - 20%	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	13	13	0.00	No Limit	
EP080: Naphthalene	91-20-3	5	µg/L	415	456	9.25	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: **SOIL**

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	
EG005T: Total Metals by ICP-AES (QCLot: 846920)									
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	6134 mg/kg	106	93	115	
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	88.4	79	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	91.0	85	109	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	96.9	89	113	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	98.7	84	116	
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	102	95	109	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	94.7	85	107	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	102	89	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	93	109	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	102	89	111	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 846921)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	91.8	85	103	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 846860)									
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	104	77	118	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	92.6	77	116	
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	86.7	68	111	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	88.0	71	111	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	86.6	69	113	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	90.1	72	108	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	88.4	73	111	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	93.2	70	115	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	87.8	60	110	
EP074B: Oxygenated Compounds (QCLot: 846860)									
EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	10 mg/kg	98.8	63	128	
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	110	68	142	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	10 mg/kg	95.9	67	123	
EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	10 mg/kg	96.8	62	128	
EP074C: Sulfonated Compounds (QCLot: 846860)									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	99.3	50	128	
EP074D: Fumigants (QCLot: 846860)									
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	88.2	65	115	
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	97.1	78	116	
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	74.8	64	104	
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	70.4	61	103	



Sub-Matrix: SOIL

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	
EP074D: Fumigants (QCLot: 846860) - continued									
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	90.3	73	117	
EP074E: Halogenated Aliphatic Compounds (QCLot: 846860)									
EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	10 mg/kg	108	45	123	
EP074: Chloromethane	74-87-3	5	mg/kg	<5	10 mg/kg	124	55	133	
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	115	58	138	
EP074: Bromomethane	74-83-9	5	mg/kg	<5	10 mg/kg	90.0	43	133	
EP074: Chloroethane	75-00-3	5	mg/kg	<5	10 mg/kg	114	66	126	
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	10 mg/kg	104	64	122	
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	99.4	68	120	
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	62.2	47	116	
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	99.7	70	118	
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	98.6	75	118	
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	104	78	120	
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	88.8	68	110	
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	90.1	70	116	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	84.2	62	111	
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	101	69	116	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	93.6	77	119	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	97.7	74	114	
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	101	80	120	
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	107	78	120	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	95.9	73	121	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	73.6	65	109	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	90.3	56	114	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	62.9	40	114	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	105	76	124	
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	104	75	123	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	64.4	45	123	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	64.2	54	106	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	88.8	60	118	
EP074F: Halogenated Aromatic Compounds (QCLot: 846860)									
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	98.8	82	117	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	94.7	75	113	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	90.4	74	113	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	91.0	72	112	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	93.2	75	115	
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	98.0	77	120	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	99.3	81	115	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	82.8	64	118	



Sub-Matrix: SOIL

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
EP074F: Halogenated Aromatic Compounds (QCLot: 846860) - continued								
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	93.5	76	120
EP074G: Trihalomethanes (QCLot: 846860)								
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	104	77	123
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	89.6	65	107
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	83.2	61	105
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	67.0	54	104
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 846899)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	109	80	121
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	91.8	70	130
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	111	80	120
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	106	70	124
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	99.7	80	122
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	114	80	126
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	111	70	128
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	111	80	125
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	90.2	70	130
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	122	80	126
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	75.4	70	124
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	111	75	125
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	104	65	125
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	102	65	128
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	97.8	65	126
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	119	65	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 846861)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	102	70	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 846898)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	734 mg/kg	104	65	131
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3091 mg/kg	107	70	126
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1507 mg/kg	99.5	70	122
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846861)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	101	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846898)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1101 mg/kg	105	68	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3914 mg/kg	102	72	116
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	283 mg/kg	111	38	132
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		
						LCS	Low	High
EP080: BTEXN (QCLot: 846861)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	92.4	74	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	100	77	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	100	73	125
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	108	77	128
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	109	81	128
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	96.8	66	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		
						LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 845690)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	107	100	110
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	106	94	113
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	99.0	88	110
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	100	87	112
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	102	87	112
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	106	88	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	104	91	111
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	105	86	110
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	107	88	112
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	105	99	110
EG035T: Total Recoverable Mercury by FIMS (QCLot: 846600)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	104	87	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 846567)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	78.3	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846567)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	75.4	65	125
EP080: BTEXN (QCLot: 846567)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	90.6	76	120
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	92.7	76	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	93.4	72	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	97.0	72	130
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	106	78	128
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	92.1	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: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
				Low	High		
EG005T: Total Metals by ICP-AES (QCLot: 846920)							
EM1704730-003	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	86.4	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.4	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	99.4	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	104	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	97.6	76	124
		EG005T: Nickel	7440-02-0	50 mg/kg	102	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	85.0	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	108	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 846921)							
EM1704730-003	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	95.0	76	116
EP074E: Halogenated Aliphatic Compounds (QCLot: 846860)							
EM1704753-002	GW47_0.50	EP074: 1,1-Dichloroethene	75-35-4	2 mg/kg	121	29	141
		EP074: Trichloroethene	79-01-6	2 mg/kg	100	50	126
EP074F: Halogenated Aromatic Compounds (QCLot: 846860)							
EM1704753-002	GW47_0.50	EP074: Chlorobenzene	108-90-7	2 mg/kg	108	65	133
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 846899)							
EM1704780-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	104	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	119	52	148
EP080/071: Total Petroleum Hydrocarbons (QCLot: 846861)							
EM1704753-002	GW47_0.50	EP080: C6 - C9 Fraction	----	28 mg/kg	92.1	42	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 846898)							
EM1704753-002	GW47_0.50	EP071: C10 - C14 Fraction	----	734 mg/kg	107	53	123
		EP071: C15 - C28 Fraction	----	3091 mg/kg	109	70	124
		EP071: C29 - C36 Fraction	----	1507 mg/kg	102	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846861)							
EM1704753-002	GW47_0.50	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	91.7	39	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846898)							
EM1704753-002	GW47_0.50	EP071: >C10 - C16 Fraction	----	1101 mg/kg	108	65	123
		EP071: >C16 - C34 Fraction	----	3914 mg/kg	104	67	121
		EP071: >C34 - C40 Fraction	----	283 mg/kg	115	44	126
EP080: BTEXN (QCLot: 846861)							
EM1704753-002	GW47_0.50	EP080: Benzene	71-43-2	2 mg/kg	105	50	136
		EP080: Toluene	108-88-3	2 mg/kg	110	56	139

Sub-Matrix: **WATER**

Matrix Spike (MS) Report



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: 845690)							
EM1704628-058	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	95.7	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	91.8	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	89.4	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	90.3	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	97.5	83	121
		EG020A-T: Nickel	7440-02-0	1 mg/L	95.0	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	93.4	74	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 846600)							
EM1704823-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	99.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 846567)							
EM1704753-024	QC08	EP080: C6 - C9 Fraction	----	280 µg/L	58.3	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846567)							
EM1704753-024	QC08	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	56.6	44	122
EP080: BTEXN (QCLot: 846567)							
EM1704753-024	QC08	EP080: Benzene	71-43-2	20 µg/L	83.9	68	130
		EP080: Toluene	108-88-3	20 µg/L	83.8	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1704753	Page	: 1 of 8
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 18-Apr-2017
Site	: Fishermens Bend	Issue Date	: 24-Apr-2017
Sampler	: JACOB MULLER	No. of samples received	: 25
Order number	: Task 3.4	No. of samples analysed	: 3

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

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



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
Duplicate (DUP) RPDs							
EP080/071: Total Petroleum Hydrocarbons	EM1704874--004	Anonymous	C6 - C9 Fraction	----	24.8 %	0% - 20%	RPD exceeds LOR based limits
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	EM1704874--004	Anonymous	C6 - C10 Fraction	C6_C10	23.1 %	0% - 20%	RPD exceeds LOR based limits

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: SOIL

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
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) GW47_0.50	13-Apr-2017	20-Apr-2017	20-Apr-2017	✓	20-Apr-2017	20-Apr-2017	✓
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103) GW47_0.50	13-Apr-2017	----	----	----	20-Apr-2017	27-Apr-2017	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) GW47_0.50	13-Apr-2017	20-Apr-2017	10-Oct-2017	✓	21-Apr-2017	10-Oct-2017	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) GW47_0.50	13-Apr-2017	20-Apr-2017	11-May-2017	✓	21-Apr-2017	11-May-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074) GW47_0.50	13-Apr-2017	19-Apr-2017	20-Apr-2017	✓	20-Apr-2017	20-Apr-2017	✓
EP074B: Oxygenated Compounds							
Soil Glass Jar - Unpreserved (EP074) GW47_0.50	13-Apr-2017	19-Apr-2017	20-Apr-2017	✓	20-Apr-2017	20-Apr-2017	✓
EP074C: Sulfonated Compounds							
Soil Glass Jar - Unpreserved (EP074) GW47_0.50	13-Apr-2017	19-Apr-2017	20-Apr-2017	✓	20-Apr-2017	20-Apr-2017	✓
EP074D: Fumigants							
Soil Glass Jar - Unpreserved (EP074) GW47_0.50	13-Apr-2017	19-Apr-2017	20-Apr-2017	✓	20-Apr-2017	20-Apr-2017	✓



Matrix: **SOIL**

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							
Soil Glass Jar - Unpreserved (EP074) GW47_0.50	13-Apr-2017	19-Apr-2017	20-Apr-2017	✓	20-Apr-2017	20-Apr-2017	✓
EP074F: Halogenated Aromatic Compounds							
Soil Glass Jar - Unpreserved (EP074) GW47_0.50	13-Apr-2017	19-Apr-2017	20-Apr-2017	✓	20-Apr-2017	20-Apr-2017	✓
EP074G: Trihalomethanes							
Soil Glass Jar - Unpreserved (EP074) GW47_0.50	13-Apr-2017	19-Apr-2017	20-Apr-2017	✓	20-Apr-2017	20-Apr-2017	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) GW47_0.50	13-Apr-2017	20-Apr-2017	27-Apr-2017	✓	21-Apr-2017	30-May-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) GW47_0.50	13-Apr-2017	19-Apr-2017	27-Apr-2017	✓	20-Apr-2017	27-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW47_0.50	13-Apr-2017	20-Apr-2017	27-Apr-2017	✓	20-Apr-2017	30-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) GW47_0.50	13-Apr-2017	19-Apr-2017	27-Apr-2017	✓	20-Apr-2017	27-Apr-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW47_0.50	13-Apr-2017	20-Apr-2017	27-Apr-2017	✓	20-Apr-2017	30-May-2017	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) GW47_0.50	13-Apr-2017	19-Apr-2017	27-Apr-2017	✓	20-Apr-2017	27-Apr-2017	✓

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
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) QC08	13-Apr-2017	20-Apr-2017	10-Oct-2017	✓	20-Apr-2017	10-Oct-2017	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) QC08	13-Apr-2017	----	----	----	20-Apr-2017	11-May-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) QC08, QC09	13-Apr-2017	20-Apr-2017	27-Apr-2017	✓	21-Apr-2017	27-Apr-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) QC08, QC09	13-Apr-2017	20-Apr-2017	27-Apr-2017	✓	21-Apr-2017	27-Apr-2017	✓

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 Work Order : EM1704753
 Client : AECOM Australia Pty Ltd
 Project : 60537182



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: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC08, QC09	13-Apr-2017	20-Apr-2017	27-Apr-2017	✓	21-Apr-2017	27-Apr-2017	✓



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: **SOIL**

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	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	1	100.00	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	
Laboratory Duplicates (DUP)							
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	19	10.53	10.00	✓	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	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP) - Continued							
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
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	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
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	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
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	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	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 in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Higginson 4B1 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	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. Mercury in solids are determined following an appropriate acid digestion. 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)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds	EP074	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
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.
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)
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
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
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)
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.

ANZ
FQM - Generic Chain of Custody Form

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AECOM

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: <i>Jacob Miller</i>		Destination Laboratory ALS	
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE:	PHONE:		
PROJECT NUMBER & TASK COI: 60537182		P.O. NO.:		EMAIL REPORT TO:			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)		Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.	
FOR LABORATORY USE ONLY COOLER SEAL (circle appropriate) Intact: Yes No N/A		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:					
SAMPLE TEMPERATURE CHILLED: Yes No							
SAMPLE INFORMATION (note: S = Soil, W=Water)							
		CONTAINER INFORMATION				HOLD X	
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code		Total bottles
	<i>GW47-0.20</i>	<i>S</i>	<i>13/4/17</i>		<i>250ml Jar</i>		<i>1</i>
	<i>GW47-0.50</i>						
	<i>GW47-1.00</i>						
	<i>GW47-1.50</i>						
	<i>GW56-0.05</i>						
	<i>GW56-0.50</i>						
	<i>GW56-1.00</i>						
	<i>GW56-1.50</i>						
	<i>GW41-0.30</i>						
	<i>GW41-0.50</i>						
	<i>GW41-0.90</i>						
	<i>GW41-1.00</i>						
	<i>GW41-1.50</i>						
	<i>GW54-0.05</i>						
	<i>GW54-0.50</i>						
	<i>GW54-1.00</i>						
	<i>GW54-1.26</i>						
	<i>GW54-1.30</i>						
	<i>GW54-1.50</i>						
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:	
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:	
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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. Soil Container Codes: Jar = Unpreserved glass jar							

Environmental Division
 Melbourne
 Work Order Reference
EM1704753



Telephone : + 61-3-8549 9600

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CONSULTANT:		ADDRESS / OFFICE:			SAMPLER:			Destination Laboratory ALS
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend			MOBILE:			
PROJECT NUMBER & TASK CODE: 60537182		P.O. NO.:			PHONE:			ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)
RESULTS REQUIRED (Date):		QUOTE NO.:			EMAIL REPORT TO:			
FOR LABORATORY USE ONLY				COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:				Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL: (circle appropriate) Intact: Yes No N/A								
SAMPLE TEMPERATURE CHILLED: Yes No								
SAMPLE INFORMATION (note: S = Soil, W=Water)						CONTAINER INFORMATION		HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	X 	
	GW50_0.05	S	13/4/17		250 ml Jar	1		
	GW50_0.50	↓	↓		↓	↓		
	GW50_1.00	↓	↓		↓	↓		
	GW50_1.50	↓	↓		↓	↓		
	QC08	W	13/4/17		Purple vials	2		
	QC08	↓	↓		Metals vial	1		
	QC09	↓	↓		Trap blank	1		
RELINQUISHED BY:			RECEIVED BY:			RECEIVED BY:		METHOD OF SHIPMENT:
Name:		Date:	Name: <i>Ryan ALS</i>		Date: <i>18/4/17</i>		Name:	Con' Note No:
Of:		Time:	Of:		Time: <i>09:20</i>		Of:	Transport Co:

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 Revision 1 June 15, 2016

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AECOM

Q4AN(EV)-007-FM1

CONSULTANT:			ADDRESS / OFFICE:			SAMPLER: <i>Jacob Miller</i>			Destination Laboratory			
PROJECT MANAGER (PM): <i>Averyll Coyne</i>			SITE: <i>Fishermens Bend</i>			MOBILE:			<i>ALS</i>			
PROJECT NUMBER & TASK COI: <i>60537182</i>			P.O. NO.:			EMAIL REPORT TO:						PHONE:
RESULTS REQUIRED (Date):			QUOTE NO.:			ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.			
FOR LABORATORY USE ONLY			COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:									
COOLER SEAL (circle appropriate): Intact: Yes No N/A												
SAMPLE TEMPERATURE												
CHILLED: Yes No												
SAMPLE INFORMATION (note: S = Soil, W=Water)						CONTAINER INFORMATION						
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles					HOLD	
	<i>GW47-0.20</i>	<i>S</i>	<i>13/4/17</i>		<i>250ml Jar</i>	<i>1</i>						<i>X</i>
	<i>GW47-0.50</i>											
	<i>GW47-1.00</i>											
	<i>GW47-1.50</i>											
	<i>GW56-0.05</i>											
	<i>GW56-0.50</i>											
	<i>GW56-1.00</i>											
	<i>GW56-1.50</i>											
	<i>GW41-0.30</i>											
	<i>GW41-0.50</i>											
	<i>GW41-0.90</i>											
	<i>GW41-1.00</i>											
	<i>GW41-1.50</i>											
	<i>GW54-0.05</i>											
	<i>GW54-0.50</i>											
	<i>GW54-1.00</i>											
	<i>GW54-1.26</i>											
	<i>GW54-1.30</i>											
	<i>GW54-1.50</i>											
RELINQUISHED BY:			RECEIVED BY			RECEIVED BY			METHOD OF SHIPMENT			
Name:			Name: <i>R...</i>			Name:			Con' Note No:			
Date:			Date: <i>18/4/17</i>			Date:			Transport Co:			
Of:			Of: <i>ALS</i>			Of:						
Time:			Time: <i>0900</i>			Time:						
<p>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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.</p> <p style="text-align: right;">Soil Container Codes: Jar = Unpreserved glass jar</p>												

Environmental Division
Melbourne
Work Order Reference
EM1704753



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Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER:		Destination Laboratory	
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE:		ALS	
PROJECT NUMBER & TASK CODE: 60537182		P.O. NO.:		EMAIL REPORT TO:			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:					
COOLER SEAL (circle appropriate)							
Intact: Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED: Yes No				Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.			
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	GW50-0.05	S	13/4/17		250 ml Jar	1	X
	GW50-0.50	↓	↓		↓	↓	
	GW50-1.00	↓	↓		↓	↓	
	GW50-1.50	↓	↓		↓	↓	
	QC08	W	13/4/17		Purple vials	2	
	QC08	↓	↓		Metals vial	1	
	QC09	↓	↓		Trap blank	1	
RELINQUISHED BY:				RECEIVED BY:		RECEIVED BY:	
Name:		Date:		Name:		METHOD OF SHIPMENT:	
OF:		Time:		OF:		Con' Note No:	
						Transport Co:	
<p>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</p> <p>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;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag</p> <p>Soil Container Codes: Jar = Unpreserved glass jar</p>							

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: <u>Jacob Miller</u>		Destination Laboratory <u>ALS</u>									
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermans Bend</u>		MOBILE:											
PROJECT NUMBER & TASK CODE: <u>R0537102</u>		P.O. NO.:		EMAIL REPORT TO:		Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.									
RESULTS REQUIRED (Date):		QUOTE NO.:		PHONE:											
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OF DISPOSAL:				ANALYSIS REQUIRED including FUITEs (note - suite codes must be listed to attract suite prices)									
COOLER SEAL (circle appropriate) Intact: Yes No N/A															
SAMPLE TEMPERATURE															
CHILLED: Yes No															
SAMPLE INFORMATION (Date, S = Soil, W = Water)			CONTAINER INFORMATION												
ALQ ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	MEYGA	PH	TRM (Cu - 0.3)	STEXN	PAHs	VOC	TRI (Cu - 5)	ALD	Other
1	GW47-0.20	S	15/4/17		250ml Jar	1									
2	GW47-0.50														
3	GW47-1.00						X	X	X	X	X	X	X	X	X
4	GW47-1.50													X	
5	GW56-0.05													X	
6	GW56-0.50													X	
7	GW56-1.00													X	
8	GW56-1.50													X	
9	GW41-0.30													X	
10	GW41-0.50													X	
11	GW41-0.90													X	
12	GW41-1.00													X	
13	GW41-1.50													X	
14	GW54-0.05													X	
15	GW54-0.50													X	
16	GW54-1.00													X	
17	GW54-1.50													X	
18	GW54-2.00													X	
19	GW54-2.50													X	

• metals - As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg
 • VOC CODE: E074



RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT
Name:	Date:	Name:	Date:	Name:	Date:	Cont' Note No:
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:

QC
FORM - Generic Chain of Custody Form

PAGE 2

AECOM

Q4AN(EV)-007-FM1

CONSULTANT:			ADDRESS / OFFICE:			SAMPLER:			Destination Laboratory								
PROJECT MANAGER (PM): Averyll Covino			SITE: Etchemens Bend			MOBILE:			4LS								
PROJECT NUMBER & TASK COI: 60537-182			P.O. NO.:			EMAIL REPORT TO:											
RESULTS REQUIRED (Date):			QUOTE NO.:			ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)											
FOR LABORATORY USE ONLY			COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:			METALS PH PAH (C6-C9) STXN PAH VOC PAH (C10-C17) HOD											
COOLER SEAL (circle appropriate)												Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.					
Intact: Yes No N/A																	
SAMPLE TEMPERATURE																	
CHILLED: Yes No																	
SAMPLE INFORMATION (note: S = Soil, W = Water)						CONTAINER INFORMATION											
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles											
20	GWSL-005	S	13/4/17		350 ml jar	1											
21	GWSL-005	S									X						
22	GWSL-100	S									X						
23	GWSL-100	S									X						
24	QC08	W	13/4/17		Purple Vials	2			X	X							
25	QC08	S			Metals vial	1	X		X	X							
26	QS09	S			Tap blank	1				X							

RELINQUISHED BY:				RECEIVED BY:				RECEIVED BY:				METHOD OF SHIPMENT	
Name:	Date:	Time:	Of:	Name:	Date:	Time:	Of:	Name:	Date:	Time:	Of:	Con' Note No:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; OPC = 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 Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Spoolation 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 Sulphate Soils; B = Unpreserved Bag
 Soil Container Codes: Jar = Unpreserved glass jar

ANZ
FQM - Generic Chain of Custody Form

PAGE 1

AECOM

Q4AN(EV)-007-FM1

CONSULTANT:			ADDRESS / OFFICE:			SAMPLER: <i>Jacob Miller</i>			Destination Laboratory ALS					
PROJECT MANAGER (PM): Averyll Coyne			SITE: Fishermens Bend			MOBILE:						PHONE:		
PROJECT NUMBER & TASK COI: 60537182			P.O. NO.:			EMAIL REPORT TO:								
RESULTS REQUIRED (Date):			QUOTE NO.:			ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)								
FOR LABORATORY USE ONLY			COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:									Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.		
COOLER SEAL (circle appropriate)														
Intact: Yes No N/A														
SAMPLE TEMPERATURE														
CHILLED: Yes No														
SAMPLE INFORMATION (note: S = Soil, W=Water)						CONTAINER INFORMATION								
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles							HOLD	
	<i>GW47-0.20</i>	<i>S</i>	<i>13/4/17</i>		<i>250ml Jar</i>	<i>1</i>							X	
	<i>GW47-0.50</i>													
	<i>GW47-1.00</i>													
	<i>GW47-1.50</i>													
	<i>GW56-0.05</i>													
	<i>GW56-0.50</i>													
	<i>GW56-1.00</i>													
	<i>GW56-1.50</i>													
	<i>GW41-0.30</i>													
	<i>GW41-0.50</i>													
	<i>GW41-0.90</i>													
	<i>GW41-1.00</i>													
	<i>GW41-1.50</i>													
	<i>GW54-0.05</i>													
	<i>GW54-0.50</i>													
	<i>GW54-1.00</i>													
	<i>GW54-1.26</i>													
	<i>GW54-1.30</i>													
	<i>GW54-1.50</i>													
RELINQUISHED BY:			RECEIVED BY									RECEIVED BY		
Name:			Date:			Name: <i>Ryan</i>			Date: <i>18/4/17</i>			Name:		
Of:			Time:			Of: <i>ALS</i>			Time: <i>0900</i>			Of:		
												METHOD OF SHIPMENT		
												Con' Note No:		
												Transport Co:		

SCANNED

Environmental Division
 Melbourne
 Work Order Reference
EM1704753



Telephone : + 61-3-8549 9600

CONSULTANT: PROJECT MANAGER (PM): Averyll Coyne		ADDRESS / OFFICE: SITE: Fishermens Bend		SAMPLER: MOBILE: _____ PHONE: _____		Destination Laboratory ALS	
PROJECT NUMBER & TASK COI 60537182		P.O. NO.:		EMAIL REPORT TO:			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:					
COOLER SEAL (circle appropriate) Intact: Yes No N/A							
SAMPLE TEMPERATURE CHILLED: Yes No							
SAMPLE INFORMATION (note: S = Soil, W=Water)		CONTAINER INFORMATION					
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	GW50-0.05	S	13/4/17		250 ml Jar	1	
	GW50-0.50	↓	↓		↓	↓	X
	GW50-1.00	↓	↓		↓	↓	
	GW50-1.50	↓	↓		↓	↓	
	QC08	W	13/4/17		Purple Vials	2	
	QC08	↓	↓		Metals vial	1	
	QC09	↓	↓		Trap blank	1	
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name: <i>Ryan ALS</i>	Date: <i>18/4/17</i>	Name:	Date:	Con' Note No:	
Of:	Time:	Of:	Time: <i>0920</i>	Of:	Time:	Transport Co:	
<p>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</p> <p>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;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.</p> <p style="text-align: right;">Soil Container Codes: Jar = Unpreserved glass jar</p>							

Analysis rec'd 19/4/17 ~~2:43~~ ~~2:43~~ AUS MK
14:13 ~~2:43~~

FORM - Generic Chain of Custody Form

PAGE 1

AECOM

GMAN(EV)-007-FM1

CONSULTANT:		PROJECT MANAGER (PM): Averyll Coyne		ADDRESS / OFFICE:		SAMPLER: Jacob Miller		Destination Laboratory																			
PROJECT NUMBER & TASK CODE: 60537102		SITE: Fishermans Bend		P.O. NO.:		MOBILE:		ALS																			
RESULTS REQUIRED (Date):		QUOTE NO.:		EMAIL REPORT TO:		PHONE:																					
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:				ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)																					
COOLER SEAL (circle appropriate) Unsealed: Yes No N/A						<table border="1"> <tr> <td>metals</td> <td>PH</td> <td>PAH (G-3)</td> <td>PTXN</td> <td>PAH'S</td> <td>VOC</td> <td>TRH (G-5)</td> <td>HOLD</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>				metals	PH	PAH (G-3)	PTXN	PAH'S	VOC	TRH (G-5)	HOLD										
metals	PH									PAH (G-3)	PTXN	PAH'S	VOC	TRH (G-5)	HOLD												
SAMPLE TEMPERATURE CHILLED: Yes No N/A						<p>Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for GC or trace LORs etc.</p>																					
SAMPLE INFORMATION (note: S = Soil, W = Water)		CONTAINER INFORMATION																									
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	metals	PH	PAH (G-3)	PTXN	PAH'S	VOC	TRH (G-5)	HOLD	HOLD												
1	GW47-0.30	S	15/4/17		250ml Jar	1																					
2	GW47-0.50																										
3	GW47-1.00						x	x	x		x																
4	GW47-1.50													x													
5	GW56-0.05													x													
6	GW56-0.50													x													
7	GW56-1.00													x													
8	GW56-1.50													x													
9	GW41-0.30													x													
10	GW41-0.50													x													
11	GW41-0.90													x													
12	GW41-1.00													x													
13	GW41-1.50													x													
14	GW52-0.05													x													
15	GW52-0.50													x													
16	GW52-1.50													x													
17	GW52-1.50													x													
18	GW52-1.50													x													
19	GW52-1.50													x													

metals - As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg
VOC CODE: EPC74

RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:	Transport Co:
Of:	Time:	Of:	Time:	Of:	Time:		

QC
QCMA - Generic Chain of Custody Form

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AECOM

QCMA(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER:		Destination Laboratory		
PROJECT MANAGER (PM): Averyll Cowie		SITE: Fishermans Bend		MOBILE:		PHONE:		
PROJECT NUMBER & TASK CODE: 00537182		P.O. NO.:		EMAIL REPORT TO:		4L		
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
ICE LABORATORY USE ONLY COOLER SEAL (circle appropriate) Intact: Yes No N/A SAMPLE TEMPERATURE CHILLED: Yes No		COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:		METALS PH TOH (CG-00) STEAN PAH VOC TOH (CG-01) HOD				Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION				
SALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
20	BW8 - 1.05	S	13/4/17		250 ml jar	1		
21	BW8 - 1.06	S						
22	BW8 - 1.07	S						
23	BW8 - 1.08	S						
24	QC08	W	13/4/17		Purple Vials	2		
↓	QC08				Metals vial	1		
25	QC09				Tap blank	1		
RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT		
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:		
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:		

CERTIFICATE OF ANALYSIS

Work Order : **EM1704834**
Client : **AECOM Australia Pty Ltd**
Contact : **MS AVERYLL COYNE**
Address : **COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET
MELBOURNE VIC, AUSTRALIA 3000**
Telephone : **+61 03 9653 1234**
Project : **60537182**
Order number : **60537182**
C-O-C number : **----**
Sampler : **J MULLER**
Site : **Fishermans Bend**
Quote number : **ME/199/16**
No. of samples received : **20**
No. of samples analysed : **4**

Page : 1 of 9
Laboratory : Environmental Division Melbourne
Contact : Carol Walsh
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9608
Date Samples Received : 19-Apr-2017 10:50
Date Analysis Commenced : 20-Apr-2017
Issue Date : 26-Apr-2017 16:33



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic 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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020T: Results for EM1704834-019 have been confirmed by re-preparation 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW46_0.50	GW40_0.50	----	----	----
Client sampling date / time				18-Apr-2017 00:00	18-Apr-2017 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704834-007	EM1704834-015	-----	-----	-----	
				Result	Result	----	----	----	
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	7.8	7.7	----	----	----	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%	9.5	23.3	----	----	----	
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	6290	4930	----	----	----	
Iron	7439-89-6	50	mg/kg	21800	28200	----	----	----	
Selenium	7782-49-2	5	mg/kg	<5	<5	----	----	----	
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	----	----	
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----	
Chromium	7440-47-3	2	mg/kg	44	7	----	----	----	
Copper	7440-50-8	5	mg/kg	188	25	----	----	----	
Lead	7439-92-1	5	mg/kg	30	73	----	----	----	
Nickel	7440-02-0	2	mg/kg	70	40	----	----	----	
Zinc	7440-66-6	5	mg/kg	79	51	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	----	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	----	----	----	
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	----	----	----	
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	----	----	----	
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	----	----	----	
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074D: Fumigants									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW46_0.50	GW40_0.50	----	----	----
Client sampling date / time				18-Apr-2017 00:00	18-Apr-2017 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704834-007	EM1704834-015	-----	-----	-----	
				Result	Result	----	----	----	
EP074D: Fumigants - Continued									
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	----	----	----	
Chloromethane	74-87-3	5	mg/kg	<5	<5	----	----	----	
Vinyl chloride	75-01-4	5	mg/kg	<5	<5	----	----	----	
Bromomethane	74-83-9	5	mg/kg	<5	<5	----	----	----	
Chloroethane	75-00-3	5	mg/kg	<5	<5	----	----	----	
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	----	----	----	
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	----	----	----	
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	----	----	----	
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW46_0.50	GW40_0.50	----	----	----
Client sampling date / time				18-Apr-2017 00:00	18-Apr-2017 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704834-007	EM1704834-015	-----	-----	-----	
				Result	Result	----	----	----	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	0.5	----	----	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	0.5	----	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----	
Benzo(b+)fluoranthene	205-99-2	205-82-3	0.5	mg/kg	<0.5	----	----	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----	
[^] Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	1.0	----	----	----	
[^] Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----	
[^] Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW46_0.50	GW40_0.50	----	----	----
Client sampling date / time				18-Apr-2017 00:00	18-Apr-2017 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704834-007	EM1704834-015	-----	-----	-----	
				Result	Result	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----	
C15 - C28 Fraction	----	100	mg/kg	140	<100	----	----	----	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	140	<50	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----	
>C16 - C34 Fraction	----	100	mg/kg	190	110	----	----	----	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	190	110	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	87.4	84.6	----	----	----	
Toluene-D8	2037-26-5	0.5	%	88.7	82.8	----	----	----	
4-Bromofluorobenzene	460-00-4	0.5	%	88.3	72.5	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	92.1	86.8	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	83.0	77.1	----	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	90.6	88.5	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW46_0.50	GW40_0.50	----	----	----
Client sampling date / time				18-Apr-2017 00:00	18-Apr-2017 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704834-007	EM1704834-015	-----	-----	-----	
				Result	Result	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	98.5	105	----	----	----	
Anthracene-d10	1719-06-8	0.5	%	107	110	----	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	91.4	95.7	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	84.0	82.0	----	----	----	
Toluene-D8	2037-26-5	0.2	%	82.8	77.3	----	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	99.9	86.0	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC10	QC11	----	----	----
Client sampling date / time				18-Apr-2017 00:00	18-Apr-2017 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704834-019	EM1704834-020	-----	-----	-----	
				Result	Result	----	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.02	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.003	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----	
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	----	----	----	
EP080: BTEXN									
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	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	88.7	88.2	----	----	----	
Toluene-D8	2037-26-5	2	%	80.6	72.5	----	----	----	
4-Bromofluorobenzene	460-00-4	2	%	97.3	91.9	----	----	----	



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	62	122
Toluene-D8	2037-26-5	64	120
4-Bromofluorobenzene	460-00-4	66	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124
Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
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	: EM1704834	Page	: 1 of 13
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 19-Apr-2017
Order number	: 60537182	Date Analysis Commenced	: 20-Apr-2017
C-O-C number	: ----	Issue Date	: 26-Apr-2017
Sampler	: J MULLER		
Site	: Fishermans Bend		
Quote number	: ME/199/16		
No. of samples received	: 20		
No. of samples analysed	: 4		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic 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: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 849323)									
EM1704834-007	GW46_0.50	EA001: pH (CaCl2)	----	0.1	pH Unit	7.8	7.9	1.27	0% - 20%
EM1704866-003	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.8	7.7	1.29	0% - 20%
EA055: Moisture Content (QC Lot: 848027)									
EB1707745-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	7.3	7.5	2.59	No Limit
EM1704448-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	33.4	31.2	6.58	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 847826)									
EM1704840-009	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	5	5	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	5	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	3140	3290	4.42	0% - 20%
EM1704834-007	GW46_0.50	EG005T: Iron	7439-89-6	50	mg/kg	3550	3450	2.69	0% - 20%
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	44	44	0.00	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	70	76	6.88	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	188	185	2.10	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	30	27	11.8	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	79	68	15.1	0% - 50%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 847826) - continued									
EM1704834-007	GW46_0.50	EG005T: Aluminium	7429-90-5	50	mg/kg	6290	5780	8.36	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	21800	24600	12.1	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 847827)									
EM1704834-007	GW46_0.50	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.00	No Limit
EM1704866-013	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.3	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 847070)									
EM1704834-007	GW46_0.50	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 847070)									
EM1704834-007	GW46_0.50	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 847070)									
EM1704834-007	GW46_0.50	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074D: Fumigants (QC Lot: 847070)									
EM1704834-007	GW46_0.50	EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 847070)									
EM1704834-007	GW46_0.50	EP074: 1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				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: 847070) - continued									
EM1704834-007	GW46_0.50	EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit
EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit		
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 847070)									
EM1704834-007	GW46_0.50	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 847070)									
EM1704834-007	GW46_0.50	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 849317)									
EM1704688-022	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	0.8	47.5	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 849317) - continued									
EM1704688-022	Anonymous	EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	0.9	60.8	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	0.9	59.5	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	0.6	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1704879-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 847071)									
EM1704834-007	GW46_0.50	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 849318)									
EM1704688-022	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EM1704879-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 847071)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 847071) - continued										
EM1704834-007	GW46_0.50	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 849318)										
EM1704688-022	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
EM1704879-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
EP080: BTEXN (QC Lot: 847071)										
EM1704834-007	GW46_0.50	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
	91-20-3	1	mg/kg	<1	<1	0.00	No Limit			
Sub-Matrix: WATER										
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: 849548)										
EM1704834-019	QC10	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	0.003	0.002	41.1	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	
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.02	0.01	0.00	No Limit	
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit	
EM1704866-017	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	0.002	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	
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.39	0.42	8.39	0% - 20%	
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	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: 849548) - continued									
EM1704866-017	Anonymous	EG020A-T: Iron	7439-89-6	0.05	mg/L	0.50	0.62	21.3	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 846600)									
EM1704753-024	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1704849-005	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 846567)									
EM1704751-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1704874-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	3790	# 4870	24.8	0% - 20%
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 846567)									
EM1704751-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1704874-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	4890	# 6160	23.1	0% - 20%
EP080: BTEXN (QC Lot: 846567)									
EM1704751-001	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
EM1704874-004	Anonymous	EP080: Benzene	71-43-2	1	µg/L	118	115	2.90	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	10	9	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	830	775	6.79	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	96	98	3.14	0% - 20%
		EP080: ortho-Xylene	95-47-6	2	µg/L	13	13	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	415	456	9.25	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: **SOIL**

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	
EG005T: Total Metals by ICP-AES (QCLot: 847826)									
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	6134 mg/kg	103	93	115	
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	92.2	79	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	90.3	85	109	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	94.2	89	113	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	92.4	84	116	
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	102	95	109	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.3	85	107	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	94.6	89	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	96.8	93	109	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	99.4	89	111	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 847827)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	97.2	85	103	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 847070)									
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	96.4	77	118	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	101	77	116	
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	92.8	68	111	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	95.3	71	111	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	97.2	69	113	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	92.5	72	108	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	96.0	73	111	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	97.1	70	115	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	93.1	60	110	
EP074B: Oxygenated Compounds (QCLot: 847070)									
EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	10 mg/kg	98.2	63	128	
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	93.2	68	142	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	10 mg/kg	94.5	67	123	
EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	10 mg/kg	89.4	62	128	
EP074C: Sulfonated Compounds (QCLot: 847070)									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	80.5	50	128	
EP074D: Fumigants (QCLot: 847070)									
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	99.2	65	115	
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	99.8	78	116	
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	74.2	64	104	
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	74.2	61	103	



Sub-Matrix: SOIL

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	
EP074D: Fumigants (QCLot: 847070) - continued									
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	79.4	73	117	
EP074E: Halogenated Aliphatic Compounds (QCLot: 847070)									
EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	10 mg/kg	93.6	45	123	
EP074: Chloromethane	74-87-3	5	mg/kg	<5	10 mg/kg	126	55	133	
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	111	58	138	
EP074: Bromomethane	74-83-9	5	mg/kg	<5	10 mg/kg	112	43	133	
EP074: Chloroethane	75-00-3	5	mg/kg	<5	10 mg/kg	108	66	126	
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	10 mg/kg	104	64	122	
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	98.3	68	120	
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	89.6	47	116	
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	100.0	70	118	
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	97.5	75	118	
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	106	78	120	
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	96.3	68	110	
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	98.4	70	116	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	85.7	62	111	
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	99.4	69	116	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	104	77	119	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	86.8	74	114	
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	95.2	80	120	
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	97.3	78	120	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	98.1	73	121	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	77.3	65	109	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	79.1	56	114	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	70.6	40	114	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	88.7	76	124	
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	93.7	75	123	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	73.0	45	123	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	63.8	54	106	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	115	60	118	
EP074F: Halogenated Aromatic Compounds (QCLot: 847070)									
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	102	82	117	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	95.3	75	113	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	99.1	74	113	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	97.0	72	112	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	104	75	115	
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	110	77	120	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	106	81	115	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	108	64	118	



Sub-Matrix: SOIL

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	
EP074F: Halogenated Aromatic Compounds (QCLot: 847070) - continued									
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	113	76	120	
EP074G: Trihalomethanes (QCLot: 847070)									
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	103	77	123	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	86.9	65	107	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	73.7	61	105	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	69.2	54	104	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 849317)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	110	80	121	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	102	70	130	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	108	80	120	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	110	70	124	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	102	80	122	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	90.6	80	126	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	102	70	128	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	101	80	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	91.6	70	130	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	96.7	80	126	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	94.5	70	124	
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	102	75	125	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	93.9	65	125	
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	96.6	65	128	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	94.3	65	126	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	101	65	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 847071)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	92.3	70	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 849318)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	734 mg/kg	92.7	65	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3091 mg/kg	98.4	70	126	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1507 mg/kg	100	70	122	
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 847071)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	88.8	68	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 849318)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1101 mg/kg	91.4	68	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3914 mg/kg	98.8	72	116	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	283 mg/kg	103	38	132	
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		
						LCS	Low	High
EP080: BTEXN (QCLot: 847071)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	107	74	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	97.3	77	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	102	73	125
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	106	77	128
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	107	81	128
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	102	66	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		
						LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 849548)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	106	100	110
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	94	113
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	107	88	110
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	103	87	112
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.9	87	112
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.1	88	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.8	91	111
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	107	86	110
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	88	112
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	99	110
EG035T: Total Recoverable Mercury by FIMS (QCLot: 846600)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	104	87	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 846567)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	78.3	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846567)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	75.4	65	125
EP080: BTEXN (QCLot: 846567)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	90.6	76	120
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	92.7	76	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	93.4	72	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	97.0	72	130
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	106	78	128
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	92.1	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: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
					Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 847826)							
EM1704834-015	GW40_0.50	EG005T: Arsenic	7440-38-2	50 mg/kg	95.2	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	90.6	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	99.2	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	89.7	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	99.6	76	124
		EG005T: Nickel	7440-02-0	50 mg/kg	92.3	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	93.6	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	108	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 847827)							
EM1704834-015	GW40_0.50	EG035T: Mercury	7439-97-6	5 mg/kg	90.2	76	116
EP074E: Halogenated Aliphatic Compounds (QCLot: 847070)							
EM1704834-015	GW40_0.50	EP074: 1,1-Dichloroethene	75-35-4	2 mg/kg	77.1	29	141
		EP074: Trichloroethene	79-01-6	2 mg/kg	77.5	50	126
EP074F: Halogenated Aromatic Compounds (QCLot: 847070)							
EM1704834-015	GW40_0.50	EP074: Chlorobenzene	108-90-7	2 mg/kg	87.5	65	133
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 849317)							
EM1704724-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	94.9	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	90.1	52	148
EP080/071: Total Petroleum Hydrocarbons (QCLot: 847071)							
EM1704834-015	GW40_0.50	EP080: C6 - C9 Fraction	----	28 mg/kg	61.1	42	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 849318)							
EM1704724-003	Anonymous	EP071: C10 - C14 Fraction	----	734 mg/kg	104	53	123
		EP071: C15 - C28 Fraction	----	3091 mg/kg	97.9	70	124
		EP071: C29 - C36 Fraction	----	1507 mg/kg	97.8	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 847071)							
EM1704834-015	GW40_0.50	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	56.7	39	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 849318)							
EM1704724-003	Anonymous	EP071: >C10 - C16 Fraction	----	1101 mg/kg	97.9	65	123
		EP071: >C16 - C34 Fraction	----	3914 mg/kg	97.4	67	121
		EP071: >C34 - C40 Fraction	----	283 mg/kg	100	44	126
EP080: BTEXN (QCLot: 847071)							
EM1704834-015	GW40_0.50	EP080: Benzene	71-43-2	2 mg/kg	88.4	50	136
		EP080: Toluene	108-88-3	2 mg/kg	90.7	56	139

Sub-Matrix: **WATER**

Matrix Spike (MS) Report



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: 849548)							
EM1704834-019	QC10	EG020A-T: Arsenic	7440-38-2	1 mg/L	99.4	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	105	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	92.5	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	90.3	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	95.8	83	121
		EG020A-T: Nickel	7440-02-0	1 mg/L	98.1	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	91.6	74	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 846600)							
EM1704823-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	99.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 846567)							
EM1704753-024	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	58.3	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 846567)							
EM1704753-024	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	56.6	44	122
EP080: BTEXN (QCLot: 846567)							
EM1704753-024	Anonymous	EP080: Benzene	71-43-2	20 µg/L	83.9	68	130
		EP080: Toluene	108-88-3	20 µg/L	83.8	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1704834	Page	: 1 of 8
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 19-Apr-2017
Site	: Fishermans Bend	Issue Date	: 26-Apr-2017
Sampler	: J MULLER	No. of samples received	: 20
Order number	: 60537182	No. of samples analysed	: 4

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

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



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
Duplicate (DUP) RPDs							
EP080/071: Total Petroleum Hydrocarbons	EM1704874--004	Anonymous	C6 - C9 Fraction	----	24.8 %	0% - 20%	RPD exceeds LOR based limits
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	EM1704874--004	Anonymous	C6 - C10 Fraction	C6_C10	23.1 %	0% - 20%	RPD exceeds LOR based limits

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: SOIL

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

Method	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
GW46_0.50,	GW40_0.50	18-Apr-2017	24-Apr-2017	25-Apr-2017	✓	24-Apr-2017	24-Apr-2017	✓
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
GW46_0.50,	GW40_0.50	18-Apr-2017	----	----	----	20-Apr-2017	02-May-2017	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
GW46_0.50,	GW40_0.50	18-Apr-2017	20-Apr-2017	15-Oct-2017	✓	21-Apr-2017	15-Oct-2017	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
GW46_0.50,	GW40_0.50	18-Apr-2017	20-Apr-2017	16-May-2017	✓	21-Apr-2017	16-May-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074)								
GW46_0.50,	GW40_0.50	18-Apr-2017	20-Apr-2017	25-Apr-2017	✓	21-Apr-2017	25-Apr-2017	✓
EP074B: Oxygenated Compounds								
Soil Glass Jar - Unpreserved (EP074)								
GW46_0.50,	GW40_0.50	18-Apr-2017	20-Apr-2017	25-Apr-2017	✓	21-Apr-2017	25-Apr-2017	✓
EP074C: Sulfonated Compounds								
Soil Glass Jar - Unpreserved (EP074)								
GW46_0.50,	GW40_0.50	18-Apr-2017	20-Apr-2017	25-Apr-2017	✓	21-Apr-2017	25-Apr-2017	✓
EP074D: Fumigants								
Soil Glass Jar - Unpreserved (EP074)								
GW46_0.50,	GW40_0.50	18-Apr-2017	20-Apr-2017	25-Apr-2017	✓	21-Apr-2017	25-Apr-2017	✓



Matrix: **SOIL**

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							
Soil Glass Jar - Unpreserved (EP074) GW46_0.50, GW40_0.50	18-Apr-2017	20-Apr-2017	25-Apr-2017	✓	21-Apr-2017	25-Apr-2017	✓
EP074F: Halogenated Aromatic Compounds							
Soil Glass Jar - Unpreserved (EP074) GW46_0.50, GW40_0.50	18-Apr-2017	20-Apr-2017	25-Apr-2017	✓	21-Apr-2017	25-Apr-2017	✓
EP074G: Trihalomethanes							
Soil Glass Jar - Unpreserved (EP074) GW46_0.50, GW40_0.50	18-Apr-2017	20-Apr-2017	25-Apr-2017	✓	21-Apr-2017	25-Apr-2017	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) GW46_0.50, GW40_0.50	18-Apr-2017	21-Apr-2017	02-May-2017	✓	23-Apr-2017	31-May-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) GW46_0.50, GW40_0.50	18-Apr-2017	20-Apr-2017	02-May-2017	✓	21-Apr-2017	02-May-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW46_0.50, GW40_0.50	18-Apr-2017	21-Apr-2017	02-May-2017	✓	21-Apr-2017	31-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) GW46_0.50, GW40_0.50	18-Apr-2017	20-Apr-2017	02-May-2017	✓	21-Apr-2017	02-May-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW46_0.50, GW40_0.50	18-Apr-2017	21-Apr-2017	02-May-2017	✓	21-Apr-2017	31-May-2017	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) GW46_0.50, GW40_0.50	18-Apr-2017	20-Apr-2017	02-May-2017	✓	21-Apr-2017	02-May-2017	✓

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
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) QC10	18-Apr-2017	21-Apr-2017	15-Oct-2017	✓	21-Apr-2017	15-Oct-2017	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) QC10	18-Apr-2017	----	----	----	20-Apr-2017	16-May-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) QC10, QC11	18-Apr-2017	20-Apr-2017	02-May-2017	✓	21-Apr-2017	02-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) QC10, QC11	18-Apr-2017	20-Apr-2017	02-May-2017	✓	21-Apr-2017	02-May-2017	✓

Page : 4 of 8
 Work Order : EM1704834
 Client : AECOM Australia Pty Ltd
 Project : 60537182



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: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) QC10,	QC11	18-Apr-2017	20-Apr-2017	02-May-2017	✓	21-Apr-2017	02-May-2017	✓



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: **SOIL**

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 Duplicates (DUP)							
Moisture Content	EA055-103	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	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-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	16	6.25	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-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	16	6.25	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-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	16	6.25	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-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	5	20.00	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 Duplicates (DUP)							
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	20	10.00	10.00	✓	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	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP) - Continued							
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
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	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
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	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
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	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	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 in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Higginson 4B1 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	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. Mercury in solids are determined following an appropriate acid digestion. 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)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds	EP074	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
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.
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)
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
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1704834

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 3
Order number	: 60537182	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermans Bend		
Sampler	: J MULLER		

Dates

Date Samples Received	: 19-Apr-2017 10:50	Issue Date	: 19-Apr-2017
Client Requested Due Date	: 27-Apr-2017	Scheduled Reporting Date	: 27-Apr-2017

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 4.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 20 / 4

General Comments

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



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA001 pH (CaCl)	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-10 TRHVOC/PAH
EM1704834-001	18-Apr-2017 00:00	GW76_0.20	✓					
EM1704834-002	18-Apr-2017 00:00	GW76_0.50	✓					
EM1704834-003	18-Apr-2017 00:00	GW76_0.80	✓					
EM1704834-004	18-Apr-2017 00:00	GW76_1.00	✓					
EM1704834-005	18-Apr-2017 00:00	GW76_1.50	✓					
EM1704834-006	18-Apr-2017 00:00	GW46_0.15	✓					
EM1704834-007	18-Apr-2017 00:00	GW46_0.50		✓	✓	✓	✓	✓
EM1704834-008	18-Apr-2017 00:00	GW46_1.00	✓					
EM1704834-009	18-Apr-2017 00:00	GW46_1.50	✓					
EM1704834-010	18-Apr-2017 00:00	GW45_0.05	✓					
EM1704834-011	18-Apr-2017 00:00	GW45_0.50	✓					
EM1704834-012	18-Apr-2017 00:00	GW45_1.00	✓					
EM1704834-013	18-Apr-2017 00:00	GW45_1.50	✓					
EM1704834-014	18-Apr-2017 00:00	GW40_0.05	✓					
EM1704834-015	18-Apr-2017 00:00	GW40_0.50		✓	✓	✓	✓	✓
EM1704834-016	18-Apr-2017 00:00	GW40_0.70	✓					
EM1704834-017	18-Apr-2017 00:00	GW40_1.00	✓					
EM1704834-018	18-Apr-2017 00:00	GW40_1.50	✓					

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-05T TRH/TEXN/8 Metals (Total)
EM1704834-019	18-Apr-2017 00:00	QC10	✓



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1704834-019	18-Apr-2017 00:00	QC10	✓	
EM1704834-020	18-Apr-2017 00:00	QC11		✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email

AP_CustomerService.ANZ@aecom.com

AVERYLL COYNE

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - HLAPro (HLAPro)
- EDI Format - XTab (XTAB)

Email

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Analysis rec'd 19/4/17 14:13 - ALS PR

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AECOM

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: PROJECT MANAGER (PM): Averyll Coyne		ADDRESS / OFFICE: SITE: Fishermens Bend		SAMPLER: J. MULLER		Destination Laboratory ALS	
PROJECT NUMBER & TASK CODE: 60537182		P.O. NO.:		MOBILE: 0469536240		PHONE:	
RESULTS REQUIRED (Date):		QUOTE NO.:		EMAIL REPORT TO: Averyll Coyne			
FOR LABORATORY USE ONLY: COOLER SEAL (circle appropriate) Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		COMMENTS (SPECIAL HANDLING / STORAGE OR DISPOSAL):		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)		Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.	
SAMPLE TEMPERATURE: CHILLED: Yes <input type="checkbox"/> No <input type="checkbox"/>				METALS Cd Cr Cu Fe Hg Mn Ni Pb Zn			
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	GW76-0.20	S	18/4/17		250ml Jar	1	
2	GW76-0.50						X
3	GW76-0.80						X
4	GW76-1.00						X
5	GW76-1.50						X
6	GW46-0.25						X
7	GW46-0.50						X
8	GW46-1.00						X
9	GW46-1.50						X
10	GW45-0.05						X
11	GW45-0.50						X
12	GW45-1.00						X
13	GW45-1.50						X
14	GW40-0.05						X
15	GW40-0.50						X
16	GW40-0.70						X
17	GW40-1.00						X
18	GW40-1.50						X
19	QC10	W			1 red vial / 2 purple		X

• METALS: As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Mn, Hg
• VOC CODES: EP074

Environmental Division
Melbourne
Work Order Reference
EM1704834

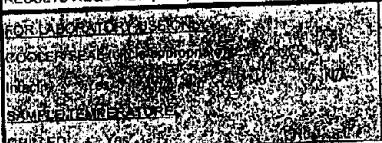


Telephone: 61-3-9549 9600

RELINQUISHED BY: Name: _____ Date: _____		RECEIVED BY: Name: _____ Date: _____		RECEIVED BY: Name: Alan Date: 19/4		METHOD OF SHIPMENT Con' Note No: _____ Transport Co: _____	
Time: _____		Time: _____		Time: 10:50			

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag
Soil Container Codes: Jar = Unpreserved glass jar

ANZ
FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MULLER		Destination Laboratory							
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0409536240		ALS							
PROJECT NUMBER & TASK CCI 60537162		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE									
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)									
		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.					
		<table border="1"> <tr> <td>META</td> <td>PH</td> <td>TOX</td> <td>2-TEX</td> <td>PAHs</td> <td>NOE</td> <td>X TRH (GUS)</td> <td>HOLD</td> </tr> </table>							META	PH	TOX	2-TEX	PAHs
META	PH	TOX	2-TEX	PAHs	NOE	X TRH (GUS)	HOLD						
SAMPLE INFORMATION (note: S = Soil, W = Water)		CONTAINER INFORMATION											
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles							
20	QC11	W	19/4/17		TRIP BLANK		X HOLD						
RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT							
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:							
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:							

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; VR = 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 = Formaldehydic Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Soil Container Codes: Jar = Unpreserved glass jar

ANZ
FQM - Generic Chain of Custody Form

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AECOM

Q4AN(EV)-007-FM1

CONSULTANT: PROJECT MANAGER (PM): Averyll Coyne		ADDRESS / OFFICE: SITE: Fishermens Bend		SAMPLER: J. MULLER		Destination Laboratory ALS		
PROJECT NUMBER & TASK CODE: 60537182		P.O. NO.:		MOBILE: 0489536240		PHONE:		
RESULTS REQUIRED (Date):		QUOTE NO.:		EMAIL REPORT TO: Averyll Coyne		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)		
FOR LABORATORY USE ONLY COOLER SEAL (circle appropriate) Intact: Yes No N/A SAMPLE TEMPERATURE CHILLED: Yes No		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL: 						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD	
	GW76-0.20	S	18/4/17		250ml Jar	1	X	
	GW76-0.50							
	GW76-0.80							
	GW76-1.00							
	GW76-1.50							
	GW46-0.25							
	GW46-0.50							
	GW46-1.00							
	GW46-1.50							
	GW45-0.05							
	GW45-0.50							
	GW45-1.00							
	GW45-1.50							
	GW40-0.05							
	GW40-0.50							
	GW40-0.70							
	GW40-1.00							
	GW40-1.50							
	QC10	W			1 red vial / 2 purple			

Environmental Division
 Melbourne
 Work Order Reference
EM1704834



Telephone : + 61-3-8549 9800

HOLD

Rinsate

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:	
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:	

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
 Soil Container Codes: Jar = Unpreserved glass jar

ANZ
FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MULLEN		Destination Laboratory				
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0407536240 PHONE:		ALS				
PROJECT NUMBER & TASK COI 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE						
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)						
FOR LABORATORY USE ONLY: COOLER SEAL (circle appropriate) Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> SAMPLE TEMPERATURE CHILLED: Yes <input type="checkbox"/> No <input type="checkbox"/>		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:		Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.						
SAMPLE INFORMATION (note: S = Soil, W=Water)		CONTAINER INFORMATION								
ALS ID	SAMPLE ID	MATRIX	DATE					Time	Type / Code	Total bottles
	QC11	W	19/4/17						TRIP BLANK	
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT				
Name:		Name:		Name: ALY		Con' Note No:				
Date:		Date:		Date: 19/4		Transport Co:				
Of:		Of:		Of: ALS		Time: 10:50				
Time:		Time:		Time:		Time:				

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
 Soil Container Codes: Jar = Unpreserved glass jar

ANZ
FQM - Generic Chain of Custody Form

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AECOM

Q4AN(EV)-007-FM1

CONSULTANT: PROJECT MANAGER (PM): Averyll Coyne		ADDRESS / OFFICE: SITE: Fishermens Bend		SAMPLER: J. MULLER		Destination Laboratory ALS	
PROJECT NUMBER & TASK COI: 60537182		P.O. NO.:		MOBILE: 0469536240		PHONE:	
RESULTS REQUIRED (Date):		QUOTE NO.:		EMAIL REPORT TO: AVERYLL COYNE			
FOR LABORATORY USE ONLY COOLER SEAL (circle appropriate) Intact: Yes No N/A		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)		Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.	
SAMPLE TEMPERATURE CHILLED: Yes No							
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	GW76-0.20	S	18/4/17		250ml Jar	1	
	GW76-0.50						X
	GW76-0.80						
	GW76-1.00						
	GW76-1.50						
	GW46-0.25						
	GW46-0.50						
	GW46-1.00						
	GW46-1.50						
	GW45-0.05						
	GW45-0.50						
	GW45-1.00						
	GW45-1.50						
	GW40-0.05						
	GW40-0.50						
	GW40-0.70						
	GW40-1.00						
	GW40-1.50						
	QC10	W			1 red vial / 2 purple		

Environmental Division
 Melbourne
 Work Order Reference
EM1704834



Telephone : + 61-3-8549 9600

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:	
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:	

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
 Soil Container Codes: Jar = Unpreserved glass jar

COC Page 1 of 2

ANZ
FQM - Generic Chain of Custody Form

PAGE 2 OF 2

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:			SAMPLER: J. MULLER			Destination Laboratory		
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend			MOBILE: 0409536240			ALS		
PROJECT NUMBER & TASK COI 60537182		P.O. NO.:			PHONE:			EMAIL REPORT TO: AVERYLL COYNE		
RESULTS REQUIRED (Date):		QUOTE NO.:			ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)					
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:								
COOLER SEAL (circle appropriate)										
Intact: Yes No N/A										
SAMPLE TEMPERATURE										
CHILLED: Yes No										
SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION					
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD			
	QC11	W	19/4/17		TRIP BLANK		X			
RELINQUISHED BY:		RECEIVED BY			RECEIVED BY			METHOD OF SHIPMENT		
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:				
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:				
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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.										
						Soil Container Codes: Jar = Unpreserved glass jar				

COC Page 2 of 2

CERTIFICATE OF ANALYSIS

Work Order : **EM1704939**
Client : **AECOM Australia Pty Ltd**
Contact : **MS AVERYLL COYNE**
Address : **COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET
MELBOURNE VIC, AUSTRALIA 3000**
Telephone : **+61 03 9653 1234**
Project : **60537182**
Order number : **60537182**
C-O-C number : **----**
Sampler : **J MULLER**
Site : **Fishermans Bend**
Quote number : **ME/199/16**
No. of samples received : **38**
No. of samples analysed : **8**

Page : 1 of 9
Laboratory : Environmental Division Melbourne
Contact : Carol Walsh
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9608
Date Samples Received : 20-Apr-2017 12:00
Date Analysis Commenced : 24-Apr-2017
Issue Date : 28-Apr-2017 18:16



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Andrew Epps	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, 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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005T:EB1707978#40 Poor duplicate precision for Lead due to sample heterogeneity. 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW62_0.50	GW67_2.30	GW54_2.60	GW45_2.00	GW56_2.5-2.6
Client sampling date / time				19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1704939-003	EM1704939-014	EM1704939-021	EM1704939-026	EM1704939-031	
				Result	Result	Result	Result	Result	
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	8.0	----	----	----	----	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%	9.2	----	----	----	----	
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	2150	----	----	----	----	
Iron	7439-89-6	50	mg/kg	3020	----	----	----	----	
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----	
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----	
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----	
Chromium	7440-47-3	2	mg/kg	7	----	----	----	----	
Copper	7440-50-8	5	mg/kg	<5	----	----	----	----	
Lead	7439-92-1	5	mg/kg	12	----	----	----	----	
Nickel	7440-02-0	2	mg/kg	4	----	----	----	----	
Zinc	7440-66-6	5	mg/kg	17	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----	
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%	----	<0.02	0.67	2.58	0.20	
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----	
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	----	----	----	----	
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	----	----	----	----	
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	----	----	----	----	
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	----	----	----	----	
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	----	----	----	----	
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	----	----	----	----	
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	----	----	----	----	
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	----	----	----	----	
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	<5	----	----	----	----	
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	----	----	----	----	
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	----	----	----	----	
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	----	----	----	----	
EP074C: Sulfonated Compounds									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW62_0.50	GW67_2.30	GW54_2.60	GW45_2.00	GW56_2.5-2.6
Client sampling date / time				19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1704939-003	EM1704939-014	EM1704939-021	EM1704939-026	EM1704939-031	
				Result	Result	Result	Result	Result	
EP074C: Sulfonated Compounds - Continued									
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	----	----	----	----	
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	----	----	----	----	
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	----	----	----	----	
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	----	----	----	----	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	----	----	----	----	
Chloromethane	74-87-3	5	mg/kg	<5	----	----	----	----	
Vinyl chloride	75-01-4	5	mg/kg	<5	----	----	----	----	
Bromomethane	74-83-9	5	mg/kg	<5	----	----	----	----	
Chloroethane	75-00-3	5	mg/kg	<5	----	----	----	----	
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	----	----	----	----	
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	----	----	----	----	
Iodomethane	74-88-4	0.5	mg/kg	<0.5	----	----	----	----	
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	----	----	----	----	
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	----	----	----	----	
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	----	----	----	----	
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	----	----	----	----	
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	----	----	----	----	
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	----	----	----	----	
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	----	----	----	----	
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	----	----	----	----	
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	----	----	----	----	
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	----	----	----	----	
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	----	----	----	----	
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	----	----	----	----	
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	----	----	----	----	
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	----	----	----	----	
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	----	----	----	----	
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	----	----	----	----	
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW62_0.50	GW67_2.30	GW54_2.60	GW45_2.00	GW56_2.5-2.6
Client sampling date / time				19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1704939-003	EM1704939-014	EM1704939-021	EM1704939-026	EM1704939-031	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	----	----	----	----	
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	----	----	----	----	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	----	----	----	----	
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	----	----	----	----	
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	----	----	----	----	
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	----	----	----	----	
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	----	----	----	----	
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	----	----	----	----	
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	----	----	----	----	
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	----	----	----	----	
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg	<0.5	----	----	----	----	
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	----	----	----	----	
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	----	----	----	----	
Bromoform	75-25-2	0.5	mg/kg	<0.5	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(b+j)fluoranthene	205-99-2	205-82-3	0.5	mg/kg	<0.5	----	----	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW62_0.50	GW67_2.30	GW54_2.60	GW45_2.00	GW56_2.5-2.6
Client sampling date / time				19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1704939-003	EM1704939-014	EM1704939-021	EM1704939-026	EM1704939-031	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----	
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----	
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----	
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----	
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----	
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	94.6	----	----	----	----	
Toluene-D8	2037-26-5	0.5	%	108	----	----	----	----	
4-Bromofluorobenzene	460-00-4	0.5	%	100	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW62_0.50	GW67_2.30	GW54_2.60	GW45_2.00	GW56_2.5-2.6
Client sampling date / time				19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1704939-003	EM1704939-014	EM1704939-021	EM1704939-026	EM1704939-031	
				Result	Result	Result	Result	Result	
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	0.5	%	95.4	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	100	----	----	----	----	
2.4.6-Tribromophenol	118-79-6	0.5	%	70.4	----	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	93.7	----	----	----	----	
Anthracene-d10	1719-06-8	0.5	%	99.6	----	----	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	80.4	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%	93.9	----	----	----	----	
Toluene-D8	2037-26-5	0.2	%	97.8	----	----	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	101	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC12	QC13	QC14	----	----
Client sampling date / time				19-Apr-2017 00:00	19-Apr-2017 00:00	19-Apr-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1704939-034	EM1704939-035	EM1704939-036	-----	-----	
				Result	Result	Result	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	88.8	96.2	92.8	----	----	
Toluene-D8	2037-26-5	2	%	98.5	102	97.2	----	----	
4-Bromofluorobenzene	460-00-4	2	%	100	102	99.6	----	----	



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	62	122
Toluene-D8	2037-26-5	64	120
4-Bromofluorobenzene	460-00-4	66	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124
Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
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	: EM1704939	Page	: 1 of 15
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 20-Apr-2017
Order number	: 60537182	Date Analysis Commenced	: 24-Apr-2017
C-O-C number	: ----	Issue Date	: 28-Apr-2017
Sampler	: J MULLER		
Site	: Fishermans Bend		
Quote number	: ME/199/16		
No. of samples received	: 38		
No. of samples analysed	: 8		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Andrew Epps	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, 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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 852122)									
EM1704925-001	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	8.0	8.0	0.00	0% - 20%
EM1704957-021	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	8.3	8.3	0.00	0% - 20%
EA055: Moisture Content (QC Lot: 852476)									
EM1704939-003	GW62_0.50	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	9.2	9.0	1.76	No Limit
EM1705008-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	15.8	17.2	9.01	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 852635)									
EB1707978-040	Anonymous	EG005T: Lead	7439-92-1	5	mg/kg	980	# 1530	43.9	0% - 20%
EB1707978-040	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	2	2	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	45	50	9.32	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	24	28	15.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	15	24.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	83	88	6.24	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	1220	1350	9.70	0% - 20%
		EG005T: Aluminium	7429-90-5	50	mg/kg	11000	11900	8.06	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	50100	56400	11.7	0% - 20%
EM1705052-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	15	10	35.7	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	6	35.9	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	18.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	12	28.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	15	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	49	41	17.6	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 852635) - continued									
EM1705052-001	Anonymous	EG005T: Aluminium	7429-90-5	50	mg/kg	7910	6650	17.3	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	7600	7120	6.49	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 852634)									
EB1707978-040	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.8	0.5	43.0	No Limit
EM1705052-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 859657)									
EM1704939-014	GW67_2.30	EP003: Total Organic Carbon	----	0.02	%	<0.02	<0.02	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 853093)									
EM1704939-003	GW62_0.50	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1705076-220	Anonymous	EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1704939-003	GW62_0.50	EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
EM1705076-220	Anonymous	EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
EM1704939-003	GW62_0.50	EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 853093)									
EM1704939-003	GW62_0.50	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1705076-220	Anonymous	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074D: Fumigants (QC Lot: 853093)									



Sub-Matrix: SOIL				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: 853093) - continued											
EM1704939-003	GW62_0.50	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EM1705076-220	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP074E: Halogenated Aliphatic Compounds (QC Lot: 853093)											
EM1704939-003	GW62_0.50	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit		
		EM1705076-220	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				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: 853093) - continued									
EM1705076-220	Anonymous	EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit		
EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit		
EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit		
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 853093)									
EM1704939-003	GW62_0.50	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1705076-220	Anonymous	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: **SOIL**

				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: 853093) - continued									
EM1705076-220	Anonymous	EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 853093)									
EM1704939-003	GW62_0.50	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1705076-220	Anonymous	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 855103)									
EB1707989-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1705110-006	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	12.4	12.3	1.28	0% - 20%
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	4.3	4.4	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	7.6	7.6	0.00	0% - 50%
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 855103) - continued									
EM1705110-006	Anonymous	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.6	0.6	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 853094)									
EM1704939-003	GW62_0.50	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1705076-220	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 855104)									
EB1707989-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	240	170	37.5	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	280	230	18.7	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	520	400	26.1	0% - 50%
EM1705110-006	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	3170	2920	8.38	0% - 20%
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	1900	1720	9.57	0% - 20%
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	5070	4640	8.86	0% - 20%
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 853094)									
EM1704939-003	GW62_0.50	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EM1705076-220	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 855104)									
EB1707989-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	440	340	24.4	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	130	110	16.8	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	620	450	31.8	0% - 50%
EM1705110-006	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	1860	1730	7.53	0% - 50%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	3070	2800	9.17	0% - 20%
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	4930	4530	8.46	0% - 20%
EP080: BTEXN (QC Lot: 853094)									
EM1704939-003	GW62_0.50	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				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: 853094) - continued									
EM1704939-003	GW62_0.50	EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1705076-220	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
	91-20-3								
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
Sub-Matrix: WATER									
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: 857043)									
EM1704939-034	QC12	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EM1705040-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0002	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	0.014	0.015	9.76	0% - 50%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.004	0.004	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	0.297	0.340	13.5	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.15	0.16	0.00	0% - 50%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.22	0.23	6.49	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 851852)									
EM1704939-034	QC12	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1705015-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 851778)									
EM1704939-034	QC12	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1705025-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	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 (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 851778)									
EM1704939-034	QC12	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1705025-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 851778)									
EM1704939-034	QC12	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
EM1705025-004	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: **SOIL**

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	
EG005T: Total Metals by ICP-AES (QCLot: 852635)									
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	6134 mg/kg	105	93	115	
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	100.0	79	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	93.2	85	109	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	97.0	89	113	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	98.6	84	116	
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	100	95	109	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.0	85	107	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	99.7	89	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	94.6	93	109	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.0	89	111	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 852634)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	89.1	85	103	
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 859657)									
EP003: Total Organic Carbon	----	0.02	%	<0.02	100 %	98.6	70	130	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 853093)									
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	95.0	77	118	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	105	77	116	
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	106	68	111	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	102	71	111	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	108	69	113	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	103	72	108	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	106	73	111	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	108	70	115	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	# 111	60	110	
EP074B: Oxygenated Compounds (QCLot: 853093)									
EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	10 mg/kg	89.6	63	128	
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	93.8	68	142	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	10 mg/kg	81.2	67	123	
EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	10 mg/kg	95.6	62	128	
EP074C: Sulfonated Compounds (QCLot: 853093)									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	101	50	128	
EP074D: Fumigants (QCLot: 853093)									
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	107	65	115	



Sub-Matrix: SOIL

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: 853093) - continued									
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	103	78	116	
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	85.7	64	104	
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	82.1	61	103	
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	89.1	73	117	
EP074E: Halogenated Aliphatic Compounds (QCLot: 853093)									
EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	10 mg/kg	100.0	45	123	
EP074: Chloromethane	74-87-3	5	mg/kg	<5	10 mg/kg	116	55	133	
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	121	58	138	
EP074: Bromomethane	74-83-9	5	mg/kg	<5	10 mg/kg	98.6	43	133	
EP074: Chloroethane	75-00-3	5	mg/kg	<5	10 mg/kg	115	66	126	
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	10 mg/kg	116	64	122	
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	112	68	120	
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	55.2	47	116	
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	110	70	118	
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	107	75	118	
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	110	78	120	
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	107	68	110	
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	108	70	116	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	105	62	111	
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	97.0	69	116	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	104	77	119	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	96.4	74	114	
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	95.6	80	120	
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	98.0	78	120	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	110	73	121	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	90.6	65	109	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	83.1	56	114	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	66.0	40	114	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	90.4	76	124	
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	89.9	75	123	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	86.0	45	123	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	73.8	54	106	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	# 132	60	118	
EP074F: Halogenated Aromatic Compounds (QCLot: 853093)									
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	107	82	117	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	92.2	75	113	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	108	74	113	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	108	72	112	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	106	75	115	



Sub-Matrix: SOIL

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	
EP074F: Halogenated Aromatic Compounds (QCLot: 853093) - continued									
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	111	77	120	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	107	81	115	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	116	64	118	
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	117	76	120	
EP074G: Trihalomethanes (QCLot: 853093)									
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	108	77	123	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	90.9	65	107	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	82.7	61	105	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	75.0	54	104	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 855103)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	108	80	121	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	109	70	130	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	108	80	120	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	108	70	124	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	104	80	122	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	87.2	80	126	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	100	70	128	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	100	80	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	96.4	70	130	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	108	80	126	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	98.4	70	124	
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	99.9	75	125	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	88.5	65	125	
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	106	65	128	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	105	65	126	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	108	65	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 853094)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	93.5	70	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 855104)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	734 mg/kg	88.5	65	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3091 mg/kg	91.3	70	126	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1507 mg/kg	88.8	70	122	
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 853094)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	91.9	68	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 855104)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1101 mg/kg	95.2	68	130	



Sub-Matrix: **SOIL**

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	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 855104) - continued									
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3914 mg/kg	89.3	72	116	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	283 mg/kg	92.2	38	132	
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080: BTEXN (QCLot: 853094)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	91.1	74	124	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	96.2	77	125	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	94.4	73	125	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	97.4	77	128	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	99.7	81	128	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	92.6	66	130	

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	
EG020T: Total Metals by ICP-MS (QCLot: 857043)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	104	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.9	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.6	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	102	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.3	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.8	88	113	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	101	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.1	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	105	99	110	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 851852)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	103	87	113	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 851778)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	80.8	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 851778)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	83.2	65	125	
EP080: BTEXN (QCLot: 851778)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	97.1	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	98.9	76	124	
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	97.8	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	97.1	78	128	



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: 851778) - continued								
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	94.0	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: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low High	
EG005T: Total Metals by ICP-AES (QCLot: 852635)							
EB1707978-044	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	100	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.6	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	94.9	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	96.8	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	104	76	124
		EG005T: Nickel	7440-02-0	50 mg/kg	99.4	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	89.0	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	112	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 852634)							
EB1707978-044	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	102	76	116
EP074E: Halogenated Aliphatic Compounds (QCLot: 853093)							
EM1704980-007	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	2 mg/kg	106	29	141
		EP074: Trichloroethene	79-01-6	2 mg/kg	90.4	50	126
EP074F: Halogenated Aromatic Compounds (QCLot: 853093)							
EM1704980-007	Anonymous	EP074: Chlorobenzene	108-90-7	2 mg/kg	100	65	133
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 855103)							
EB1707989-003	Anonymous	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	96.5	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	83.3	52	148
EP080/071: Total Petroleum Hydrocarbons (QCLot: 853094)							
EM1704980-007	Anonymous	EP080: C6 - C9 Fraction	----	28 mg/kg	77.0	42	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 855104)							
EB1707989-002	Anonymous	EP071: C10 - C14 Fraction	----	734 mg/kg	89.4	53	123
		EP071: C15 - C28 Fraction	----	3091 mg/kg	91.2	70	124
		EP071: C29 - C36 Fraction	----	1507 mg/kg	88.3	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 853094)							
EM1704980-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	74.2	39	129



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
						Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 855104)							
EB1707989-002	Anonymous	EP071: >C10 - C16 Fraction	----	1101 mg/kg	95.4	65	123
		EP071: >C16 - C34 Fraction	----	3914 mg/kg	89.1	67	121
		EP071: >C34 - C40 Fraction	----	283 mg/kg	90.0	44	126
EP080: BTEXN (QCLot: 853094)							
EM1704980-007	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	90.7	50	136
		EP080: Toluene	108-88-3	2 mg/kg	91.9	56	139
Sub-Matrix: WATER				Matrix Spike (MS) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
						Low	High
EG020T: Total Metals by ICP-MS (QCLot: 857043)							
EM1704939-034	QC12	EG020A-T: Arsenic	7440-38-2	1 mg/L	103	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	88.2	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	100	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	95.2	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	96.9	83	121
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.3	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	102	74	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 851852)							
EM1704958-007	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	96.4	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 851778)							
EM1704939-035	QC13	EP080: C6 - C9 Fraction	----	280 µg/L	61.7	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 851778)							
EM1704939-035	QC13	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	62.2	44	122
EP080: BTEXN (QCLot: 851778)							
EM1704939-035	QC13	EP080: Benzene	71-43-2	20 µg/L	81.7	68	130
		EP080: Toluene	108-88-3	20 µg/L	86.0	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1704939	Page	: 1 of 8
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 20-Apr-2017
Site	: Fishermans Bend	Issue Date	: 28-Apr-2017
Sampler	: J MULLER	No. of samples received	: 38
Order number	: 60537182	No. of samples analysed	: 8

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

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB1707978--040	Anonymous	Lead	7439-92-1	43.9 %	0% - 20%	RPD exceeds LOR based limits
Laboratory Control Spike (LCS) Recoveries							
EP074A: Monocyclic Aromatic Hydrocarbons	QC-853093-001	----	n-Butylbenzene	104-51-8	111 %	60-110%	Recovery greater than upper control limit
EP074E: Halogenated Aliphatic Compounds	QC-853093-001	----	Hexachlorobutadiene	87-68-3	132 %	60-118%	Recovery greater than upper control limit

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: **SOIL**

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	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) GW62_0.50	19-Apr-2017	24-Apr-2017	26-Apr-2017	✓	24-Apr-2017	24-Apr-2017	✓	
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103) GW62_0.50	19-Apr-2017	----	----	----	24-Apr-2017	03-May-2017	✓	
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) GW62_0.50	19-Apr-2017	26-Apr-2017	16-Oct-2017	✓	27-Apr-2017	16-Oct-2017	✓	
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) GW62_0.50	19-Apr-2017	26-Apr-2017	17-May-2017	✓	27-Apr-2017	17-May-2017	✓	
EP003: Total Organic Carbon (TOC) in Soil								
Soil Glass Jar - Unpreserved (EP003) GW67_2.30, GW45_2.00,	GW54_2.60, GW56_2.5-2.6	19-Apr-2017	28-Apr-2017	17-May-2017	✓	28-Apr-2017	17-May-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074) GW62_0.50	19-Apr-2017	24-Apr-2017	26-Apr-2017	✓	26-Apr-2017	26-Apr-2017	✓	



Matrix: **SOIL**

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
EP074B: Oxygenated Compounds							
Soil Glass Jar - Unpreserved (EP074) GW62_0.50	19-Apr-2017	24-Apr-2017	26-Apr-2017	✓	26-Apr-2017	26-Apr-2017	✓
EP074C: Sulfonated Compounds							
Soil Glass Jar - Unpreserved (EP074) GW62_0.50	19-Apr-2017	24-Apr-2017	26-Apr-2017	✓	26-Apr-2017	26-Apr-2017	✓
EP074D: Fumigants							
Soil Glass Jar - Unpreserved (EP074) GW62_0.50	19-Apr-2017	24-Apr-2017	26-Apr-2017	✓	26-Apr-2017	26-Apr-2017	✓
EP074E: Halogenated Aliphatic Compounds							
Soil Glass Jar - Unpreserved (EP074) GW62_0.50	19-Apr-2017	24-Apr-2017	26-Apr-2017	✓	26-Apr-2017	26-Apr-2017	✓
EP074F: Halogenated Aromatic Compounds							
Soil Glass Jar - Unpreserved (EP074) GW62_0.50	19-Apr-2017	24-Apr-2017	26-Apr-2017	✓	26-Apr-2017	26-Apr-2017	✓
EP074G: Trihalomethanes							
Soil Glass Jar - Unpreserved (EP074) GW62_0.50	19-Apr-2017	24-Apr-2017	26-Apr-2017	✓	26-Apr-2017	26-Apr-2017	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) GW62_0.50	19-Apr-2017	26-Apr-2017	03-May-2017	✓	26-Apr-2017	05-Jun-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) GW62_0.50	19-Apr-2017	24-Apr-2017	03-May-2017	✓	26-Apr-2017	03-May-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW62_0.50	19-Apr-2017	26-Apr-2017	03-May-2017	✓	27-Apr-2017	05-Jun-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) GW62_0.50	19-Apr-2017	24-Apr-2017	03-May-2017	✓	26-Apr-2017	03-May-2017	✓
Soil Glass Jar - Unpreserved (EP071) GW62_0.50	19-Apr-2017	26-Apr-2017	03-May-2017	✓	27-Apr-2017	05-Jun-2017	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) GW62_0.50	19-Apr-2017	24-Apr-2017	03-May-2017	✓	26-Apr-2017	03-May-2017	✓

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
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) QC12	19-Apr-2017	27-Apr-2017	16-Oct-2017	✓	27-Apr-2017	16-Oct-2017	✓



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
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) QC12	19-Apr-2017	----	----	----	24-Apr-2017	17-May-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) QC12, QC14	19-Apr-2017	26-Apr-2017	03-May-2017	✓	26-Apr-2017	03-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) QC12, QC14	19-Apr-2017	26-Apr-2017	03-May-2017	✓	26-Apr-2017	03-May-2017	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC12, QC14	19-Apr-2017	26-Apr-2017	03-May-2017	✓	26-Apr-2017	03-May-2017	✓



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: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	19	15.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	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	Reaular	Actual	Expected	Evaluation	
Analytical Methods							



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	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 in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Higginson 4B1 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	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. Mercury in solids are determined following an appropriate acid digestion. 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 Organic Carbon	EP003	SOIL	In house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red detector.
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds	EP074	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
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.
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)



Analytical Methods	Method	Matrix	Method Descriptions
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
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Dry and Pulverise (up to 100g)	GEO30	SOIL	#
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
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)
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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1704939**

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 3
Order number	: 60537182	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermans Bend		
Sampler	: J MULLER		

Dates

Date Samples Received	: 20-Apr-2017 12:00	Issue Date	: 21-Apr-2017
Client Requested Due Date	: 01-May-2017	Scheduled Reporting Date	: 01-May-2017

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 2.1°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 38 / 8

General Comments

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



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA001 pH (CaCl)	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP003 Total Organic Carbon (TOC) in Soil	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-10 TRHVOC/PAH
EM1704939-001	19-Apr-2017 00:00	GW62_0.05	✓						
EM1704939-002	19-Apr-2017 00:00	GW62_0.40	✓						
EM1704939-003	19-Apr-2017 00:00	GW62_0.50		✓	✓	✓		✓	✓
EM1704939-005	19-Apr-2017 00:00	GW62_1.10	✓						
EM1704939-006	19-Apr-2017 00:00	GW62_1.50	✓						
EM1704939-007	19-Apr-2017 00:00	GW62_2.00	✓						
EM1704939-008	19-Apr-2017 00:00	GW74_0.05	✓						
EM1704939-009	19-Apr-2017 00:00	GW74_0.50	✓						
EM1704939-010	19-Apr-2017 00:00	GW74_0.60	✓						
EM1704939-011	19-Apr-2017 00:00	GW74_1.00	✓						
EM1704939-012	19-Apr-2017 00:00	GW67_1.85	✓						
EM1704939-013	19-Apr-2017 00:00	GW67_2.10	✓						
EM1704939-014	19-Apr-2017 00:00	GW67_2.30					✓		
EM1704939-015	19-Apr-2017 00:00	GW67_3.00	✓						
EM1704939-016	19-Apr-2017 00:00	GW67_4.00	✓						
EM1704939-017	19-Apr-2017 00:00	GW67_5.00	✓						
EM1704939-018	19-Apr-2017 00:00	GW74_1.50	✓						
EM1704939-019	19-Apr-2017 00:00	GW54_1.60	✓						
EM1704939-020	19-Apr-2017 00:00	GW54_2.10	✓						
EM1704939-021	19-Apr-2017 00:00	GW54_2.60					✓		
EM1704939-022	19-Apr-2017 00:00	GW54_3.10	✓						
EM1704939-023	19-Apr-2017 00:00	GW54_3.20	✓						
EM1704939-024	19-Apr-2017 00:00	GW54_5.00	✓						
EM1704939-025	19-Apr-2017 00:00	GW45_1.50	✓						
EM1704939-026	19-Apr-2017 00:00	GW45_2.00					✓		
EM1704939-027	19-Apr-2017 00:00	GW45_3.00	✓						
EM1704939-028	19-Apr-2017 00:00	GW45_3.30	✓						
EM1704939-029	19-Apr-2017 00:00	GW56_1.50	✓						
EM1704939-030	19-Apr-2017 00:00	GW56_2.10	✓						
EM1704939-031	19-Apr-2017 00:00	GW56_2.60					✓		
EM1704939-032	19-Apr-2017 00:00	GW56_2.70	✓						
EM1704939-033	19-Apr-2017 00:00	GW56_4.50	✓						
EM1704939-037	19-Apr-2017 00:00	GW45_2.5	✓						
EM1704939-038	19-Apr-2017 00:00	GW45_4.9-5.0	✓						
EM1704939-039	19-Apr-2017 00:00	GW46_1.00	✓						



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - W-02T 8 metals (Total)	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1704939-034	19-Apr-2017 00:00	QC12	✓	✓	✓
EM1704939-035	19-Apr-2017 00:00	QC13			✓
EM1704939-036	19-Apr-2017 00:00	QC14			✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email

AP_CustomerService.ANZ@aecom.com

AVERYLL COYNE

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - HLAPro (HLAPro)
- EDI Format - XTab (XTAB)

Email

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ANZ
FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MULLER		Destination Laboratory ALS		
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: _____ PHONE: 0409536240				
PROJECT NUMBER & TASK COI: 60537182		P.O. NO.:		EMAIL REPORT TO: AVERTILU COYNE				
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY:		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)								
Intact: Yes _____ No _____ N/A _____								
SAMPLE TEMPERATURE								
CHILLED: Yes _____ No _____								
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD	
	GW62-0.05	S	19/4/17		250ml Jar	1	X	
	GW62-0.40							
	GW62-0.50							
	GW62-1.00							
	GW62-1.10							
	GW62-1.50							
	GW62-2.00							
	GW74-0.05							
	GW74-0.50							
	GW74-0.60							
	GW74-1.00							
	GW67-1.85							
	GW67-2.10							
	GW67-2.30							
	GW67-3.00							
	GW67-4.00							
	GW67-5.00							
	GW74-1.50							
RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT		
Name:	Date:	Name:	Date:	Name: Manna	Date: 2014	Con' Note No: Transport Co:		
Of:	Time:	Of:	Time:	Of: AL	Time: 12:00			
<small>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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. Soil Container Codes: Jar = Unpreserved glass jar</small>								

Environmental Division
Melbourne
Work Order Reference
EM1704939



Telephone: +61-3-8549 9600

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: <u>J. Muller / Aarion</u>		Destination Laboratory	
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0407536240</u>		PHONE:	
PROJECT NUMBER & TASK COI: <u>80537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>		ALS	
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:					
COOLER SEAL (circle appropriate):							
Intact: Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED: Yes No		Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.					
SAMPLE INFORMATION (note: S = Soil, W = Water)							
CONTAINER INFORMATION							
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	GW54-1.60	S	19/4/17		250ml Jar	1	
	GW54-2.10						
	GW54-2.60						
	GW54-3.10						
	GW54-3.20						
	GW54-5.00						
	GW45-1.50						
	GW45-2.00						
	GW45-3.00						
	GW45-3.30						
	GW56-1.50						
	GW56-2.10						
	GW56-2.60						
	GW56-2.70						
	GW56-4.50						
	QC12				1 red vial 2 purple		
	QC13						
	QC14						
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:	
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:	
				Date: <u>2017</u> Time: <u>12:00</u>		Rinsate Treated blank " "	

ANZ
FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MULLER		De. AL
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE:		
PROJECT NUMBER & TASK COI 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE		PHONE: 0409536240
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)		
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:				
COOLER SEAL (circle appropriate)						
Intact: Yes No N/A						
SAMPLE TEMPERATURE						
CHILLED: Yes No						
SAMPLE INFORMATION (note: S = Soil, W=Water)			CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles
	GW62-0.05	S	11/4/17		250ml Jar	1
	GW62-0.40					
	GW62-0.50					
	GW62-1.00					
	GW62-1.10					
	GW62-1.50					
	GW62-2.00					
	GW74-0.05					
	GW74-0.50					
	GW74-0.60					
	GW74-1.00					
	GW67-1.85					
	GW67-2.10					
	GW67-2.30					
	GW67-3.00					
	GW67-4.00					
	GW67-5.00					
	GW74-1.50					
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name:	Date:	Name:	Date:	Name: Mulla	Date: 2017	Con' Note No:
Of:	Time:	Of:	Time:	Of: AL	Time: 12:00	Transport Co:
<small>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</small> <small>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</small> <small>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.</small>						
<small>Soil Container Codes: Jar = Unpreserved glass jar</small>						

Notes: e.g. Highly conta.
 e.g. "High PAHs expected".
 Extra volume for QC or trace LL

Environmental Division
 Melbourne
 Work Order Reference
EM1704939



Telephone : + 61-3-8549 9600

ANZ
FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: <u>J. Muller / Aaron</u>		Destination Laboratory ALS	
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0407536240</u> PHONE:			
PROJECT NUMBER & TASK COI: <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>		Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.	
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:					
COOLER SEAL (circle appropriate) Intact: Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED: Yes No							
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	<u>GW54-1.60</u>	<u>S</u>	<u>19/4/17</u>		<u>250ml Jar</u>	<u>1</u>	
	<u>GW54-2.10</u>						
	<u>GW54-2.60</u>						
	<u>GW54-3.10</u>						
	<u>GW54-3.20</u>						
	<u>GW54-5.00</u>						
	<u>GW45-1.50</u>						
	<u>GW45-2.00</u>						
	<u>GW45-3.00</u>						
	<u>GW45-3.30</u>						
	<u>GW56-1.50</u>						
	<u>GW56-2.10</u>						
	<u>GW56-2.60</u>						
	<u>GW56-2.70</u>						
	<u>GW56-4.50</u>						
	<u>QC12</u>				<u>1 red vial 2 purple</u>		
	<u>QC13</u>						
	<u>QC14</u>						
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:	
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:	

Analysis rec'd 21/4/17 3:13 pm - ALS PR

AECOM

AN2

FORM - Generic Chain of Custody Form

Page 1

QMAN(EVI)-007-FRM

CONSULTANT		ADDRESS / OFFICE		SAMPLER		Destination Laboratory	
PROJECT MANAGER (PM) Averyll Coyne		SITE Fishermens Bend		MOBILE: J. MILLER		PHONE: 04095 6240	
PROJECT NUMBER & TASK CODE 60537182		PG. NO.		EMAIL REPORT TO AVERYLL COYNE		ALS	
RESULTS REQUIRED (Date)		QUOTE NO.		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL					
COOLER SEAL (circle appropriate)		<p>TOC</p> <p>METALS</p> <p>PAH (C, G, B)</p> <p>VOC (E, B, H, T)</p> <p>BTEXN</p> <p>PAH</p> <p>PH</p> <p>HQD</p>					
Extract Yes No N/A							
SAMPLE TEMPERATURE							
REFILL LED Yes No		Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc					
SAMPLE INFORMATION (from S & S or SW-100)				CONTAINER INFORMATION			
ALS ID#	SAMPLE ID	MATRIX	DATE	Time	Type Code	Total Dofies	
1	GW62 - 0.05	S	11/4/17		250ml Jar		
2	GW62 - 0.40						
3	GW62 - 0.50						
NR 4	GW62 - 1.00						
5	GW62 - 1.10						
6	GW62 - 1.50						
7	GW62 - 2.00						
8	GW74 - 0.05						
9	GW74 - 0.50						
10	GW74 - 0.60						
11	GW74 - 1.00						
12	GW67 - 1.75						
13	GW67 - 2.10						
14	GW67 - 2.30						
15	GW67 - 3.00						
16	GW67 - 4.00						
17	GW67 - 5.00						
18	GW14 - 1.50						

metals, As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg.



NR

4

RELINQUISHED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name: ADAM	Date: 20/4	Con' Note No:	
Of:	Time:	Of:	Time:	Of: AL	Time: 12:00	Transport Co:	

Water Container Codes: P = Unpreserved Plastic, M = Nitric Preserved Plastic, ORC = Nitric Preserved ORC, SH = Sodium Hydroxide/Cd Preserved, S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved, AF = Airfreight Unpreserved Plastic
 V = YOA Vial (HCl Preserved), VB = YOA Vial Sodium Borophosphate Preserved, VS = YOA Vial Sulfuric Preserved, AM = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass, H = HCl preserved Plastic, HS = HCl preserved Speciation bottle, SP = Sulfuric Preserved Plastic
 B = Borosilicate Preserved Bottle, Z = Zinc Acetate Preserved Bottle, E = EDTA Preserved Bottle, ST = Sterile Bottle, ASS = Plastic Bag for Acid Sulphate Soils, B = Unpreserved Bag
 Soil Container Codes: Jar = Unpreserved glass jar

AM7

COM - Generic Chain of Custody Form

Q1AN(EV)-007-FM1

CONSULTANT		ADDRESS / OFFICE		SAMPLER: <u>T. MULLER / ARIOW</u>		Destination Laboratory	
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0407536240</u> PHONE:		<u>ALS</u>	
PROJECT NUMBER & TASK CODE: <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:				Notes: e.g. Highly contaminated sample e.g. "High PAHs expected".	
COOLER SEAL (circle appropriate)						Extra volume for QC or trace LORs etc.	
Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> H/A							
SAMPLE TEMPERATURE							
CHILLED: Yes <input type="checkbox"/> No <input type="checkbox"/>							
SAMPLE INFORMATION (note: G = Soil, W = Water)				CONTAINER INFORMATION			
AGE ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLO
19	GW54-1.60	S	19/4/17		250ml Jar	1	
20	GW54-2.10						
21	GW54-2.60						
22	GW54-3.10						
23	GW54-3.20						
24	GW54-5.00						
25	GW45-1.50						
26	GW45-2.00						
27	GW45-3.00						
28	GW45-3.30						
29	GW56-1.50						
30	GW56-2.10						
31	GW56-2.60						
32	GW56-2.70						
33	GW56-4.50						
34	QC12				Lab used sample		
35	QC13						
36	QC14						
RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT:	
Name:	Date:	Name:	Date:	Name: <u>D. Muller</u>	Date: <u>2017</u>	Con' Note No:	
OF:	Time:	OF:	Time:	OF: <u>ALS</u>	Time: <u>17:00</u>	Transport Co:	
<p>Matrix Container Codes: P = Unpreserved Plastic; N = Nitro Preserved Plastic; DRG = Nitric Preserved DRG; RH = Sodium Hydroxide/HCl Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic</p> <p>V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate 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;</p> <p>GP = Glycerol Phosphate Preserved Glass; Z = Zinc acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag</p> <p>Soil Container Codes: Jar = Unpreserved glass jar</p>							

Samples received without CoC

AGENT / SENDER:	COC SEQUENCE NUMBER (Circle) COC: - 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7	Comments	
OBJECT:			
CONTACT NAME:			
CONTACT NUMBER:			SAMPLES RECEIVED BY:
CARRIER:			<i>Isaac (ALS)</i>
NOTE REFERENCE:			DATE/TIME: <i>8/4/1800</i>
SAMPLER:			ANALYSIS RECEIVED BY:
NUMBER OF SAMPLES/MATRIX:			
Alert services notified by:	DATE/TIME:		

ALS WO Label

SAMPLE DETAILS				NUMBER OF CONTAINERS	Additional Information
SAMPLE ID	DATE	MATRIX			
<i>37</i> GW45-2.5	<i>19/4/17</i>	<i>S</i>	<i>1</i>		
<i>38</i> GW45-4.9-5.0	<i>19/9/17</i>	<i>S</i>	<i>1</i>		
<i>39</i> GW46-1.0	<i>19/4/17</i>	<i>S</i>	<i>1</i>		

LAB ID

ANZ
FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MULLER		Destination Laboratory		
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE:		PHONE: 04 09536240		
PROJECT NUMBER & TASK COI 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE		ALS		
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)								
Intact: Yes No N/A								
SAMPLE TEMPERATURE								
CHILLED: Yes No								
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD	
	GW62-0.05	S	19/4/17		250ml Jar	1	X	
	GW62-0.40							
	GW62-0.50							
	GW62-1.00							
	GW62-1.10							
	GW62-1.50							
	GW62-2.00							
	GW74-0.05							
	GW74-0.50							
	GW74-0.60							
	GW74-1.00							
	GW67-1.85							
	GW67-2.10							
	GW67-2.30							
	GW67-3.00							
	GW67-4.00							
	GW67-5.00							
	GW74-1.50							
RELINQUISHED BY:			RECEIVED BY			RECEIVED BY		METHOD OF SHIPMENT
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:		
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:		
<small>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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. Soil Container Codes: Jar = Unpreserved glass jar</small>								

SCANNED

Environmental Division
Melbourne
Work Order Reference
EM1704939



Telephone: + 61-3-8549 9800

FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: <i>J. MULLER / Aaron</i>		Destination Laboratory	
PROJECT MANAGER (PM): <i>Averyll Coyne</i>		SITE: <i>Fishermens Bend</i>		MOBILE: <i>0407536240</i>		PHONE:	
PROJECT NUMBER & TASK COI: <i>60537182</i>		P.O. NO.:		EMAIL REPORT TO: <i>AVERYLL COYNE</i>		<i>ALS</i>	
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:					
COOLER SEAL (circle appropriate)							
Intact: Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED: Yes No							
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	<i>GW54-1.60</i>	<i>S</i>	<i>19/4/17</i>		<i>250ml Jar</i>	<i>1</i>	
	<i>GW54-2.10</i>						
	<i>GW54-2.60</i>						
	<i>GW54-3.10</i>						
	<i>GW54-3.20</i>						
	<i>GW54-5.00</i>						
	<i>GW45-1.50</i>						
	<i>GW45-2.00</i>						
	<i>GW45-3.00</i>						
	<i>GW45-3.30</i>						
	<i>GW56-1.50</i>						
	<i>GW56-2.10</i>						
	<i>GW56-2.60</i>						
	<i>GW56-2.70</i>						
	<i>GW56-4.50</i>						
	<i>QC12</i>				<i>1 red vial 2 purple</i>		
	<i>QC13</i>						
	<i>QC14</i>						
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:	
Of:	Time:	Of:	Time:	Of:	Time:	Transport Co:	
				<i>2016</i>		<i>Reusate</i>	
				<i>12:00</i>		<i>Transport blank</i>	
						<i>11 11</i>	

Analysis rec'd 2/4/17 3:13 pm - ALS PR

ARCOM

AMZ
FORM - Generic Chain of Custody Form

Page 1

04AN(EV)-007-FRM

CONSULTANT		ADDRESS / OFFICE		SAMPLER: J. MYLWER		Destination Laboratory									
PROJECT MANAGER (PM): Averyll Goyne		SITE: Fishermans Bend		MOBILE:		ALS									
PROJECT NUMBER & TASK CODE: 60537182		P.C. NO:		EMAIL REPORT TO: A.Goyne@arcom.com.au		PHONE: 041 095 6240									
RESULTS REQUIRED (Date):		QUOTE NO:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)											
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.							
COOLER SEAL (circle appropriate)															
CHILLED: Yes No N/A															
SAMPLE INFORMATION (note: S = Soil, W = Water)		CONTAINER INFORMATION						<p>Metals: As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg.</p> <p>↓</p>							
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	TOC		METALS	TOX (C, U, P)	VOC	BTEXN	PAH	PH	W/D
1	GW62-0.05	S	11/4/17		250ml Jar	1									X
2	GW62-0.40														X
3	GW62-0.50														X
NR 4	GW62-1.00								X	X	X		X		X
5	GW62-1.10														X
6	GW62-1.50														X
7	GW62-2.00														X
8	GW74-0.25														X
9	GW74-0.50														X
10	GW74-0.60														X
11	GW74-1.00														X
12	GW67-1.25														X
13	GW67-2.00														X
14	GW67-2.30						X								X
15	GW67-2.50														X
16	GW67-2.00														X
17	GW67-2.00													X	
18	GW74-1.50													X	
RELINQUISHED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT									
Name:	Date:	Name:	Date:	Name:	Date:	Con' Note No:									
OF:	Time:	OF:	Time:	OF:	Time:	Transport Co:									

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT		ADDRESS / OFFICE		SAMPLER: <u>T. MULLER / ARIAN</u>		Destination Laboratory	
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0407536240</u>		PHONE:	
PROJECT NUMBER & TASK CODE: <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>		ALS	
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE, OR DISPOSAL:					
COOLER SEAL (circle appropriate)		TOC TO-D TOH (C6-C8) TRH (C6-C8) BTEX N METALS HClO					
Initial: Yes No N/A							
SAMPLE TEMPERATURE							
SHIELDED: Yes No		Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.					
SAMPLE INFORMATION (note: C = Soil, W = Water)				CONTAINER INFORMATION			
ASS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
19	GW54-1.60	S	19/4/17		250ml Jar	1	
20	GW54-2.10						X
21	GW54-2.60						X
22	GW54-3.10						X
23	GW54-3.20						X
24	GW54-5.00						X
25	GW45-1.50						X
26	GW45-2.00						X
27	GW45-3.00						X
28	GW45-3.30						X
29	GW56-1.50						X
30	GW56-2.10						X
31	GW56-2.60						X
32	GW56-2.70						X
33	GW56-4.50						X
34	QC12				100ml Sample		X
35	QC13						X
36	QC14						X

RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT:	
Name:	Date:	Name:	Date:	Name:	Date:		
Time:	Time:	Time:	Time:	Time:	Time:		
Name: <u>[Signature]</u>		Name: <u>[Signature]</u>		Name: <u>[Signature]</u>		Con' Note No:	
Time: <u>12:00</u>		Time: <u>12:00</u>		Time: <u>12:00</u>		Transport Co.:	

Peter Ravlic

From: Coyne, Averyll <Averyll.Coyne@aecom.com>
Sent: Monday, 24 April 2017 3:49 PM
To: Peter Ravlic
Subject: RE: EM1704939 URSVIC 60537182 Fishermans Bend

Hi Peter,

Thanks for this.

Please see below in red.

Kind Regards
Averyll

Averyll Coyne

Principal Environmental Scientist
D +61 3 9653 8072 M +61 499 252 502
Averyll.Coyne@aecom.com

AECOM

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aecom.com

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From: Peter Ravlic [mailto:peter.ravlic@alsglobal.com]
Sent: Monday, 24 April 2017 9:46 AM
To: Coyne, Averyll
Subject: FW: EM1704939 URSVIC 60537182 Fishermans Bend

Hi Averyll

A couple of queries regarding this work order.

- Sample 4, "GW62_1.00" was not received. Noted.
- Extra samples include:
 - 37: GW45_2.5 (Soil, 19/4/17)
 - 38: GW45_4.9-5.0 (Soil, 19/4/17)
 - 39: GW46_1.0 (Soil, 19/4/17)Noted. Please hold.
- 34: TPH (C6-C40) was requested, however only vials were received. W-18 to be analysed. Thank you. Please proceed with W-18.
- Depth discrepancies:
 - 30: COC depth – 2.1. Jar depth – 2.0. Sample depth is 2-2.1
 - 31: COC depth – 2.6. Jar depth – 2.5. Sample depth is 2.5-2.6
 - 33: COC depth – 4.5. Jar depth – 4.4. Sample depth is 4.4-4.5

Thanks

CERTIFICATE OF ANALYSIS

Work Order : **EM1704980**
Client : **AECOM Australia Pty Ltd**
Contact : **MS AVERYLL COYNE**
Address : **COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET
MELBOURNE VIC, AUSTRALIA 3000**
Telephone : **+61 03 9653 1234**
Project : **60537182**
Order number : **task 3.4**
C-O-C number : **----**
Sampler : **J Muller**
Site : **Fishermens Bend**
Quote number : **ME/199/16**
No. of samples received : **30**
No. of samples analysed : **10**

Page : 1 of 10
Laboratory : Environmental Division Melbourne
Contact : Carol Walsh
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9608
Date Samples Received : 21-Apr-2017 09:40
Date Analysis Commenced : 24-Apr-2017
Issue Date : 28-Apr-2017 18:19



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Andrew Epps	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW43_2.50	QC15	GW43_4.00	GW50_2.50	GW51_2.10
Client sampling date / time				20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1704980-004	EM1704980-007	EM1704980-008	EM1704980-012	EM1704980-018	
				Result	Result	Result	Result	Result	
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	----	7.9	7.9	----	----	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%	----	19.8	19.7	----	----	
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	----	500	490	----	----	
Iron	7439-89-6	50	mg/kg	----	870	840	----	----	
Selenium	7782-49-2	5	mg/kg	----	<5	<5	----	----	
Arsenic	7440-38-2	5	mg/kg	----	<5	<5	----	----	
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	----	----	
Chromium	7440-47-3	2	mg/kg	----	2	2	----	----	
Copper	7440-50-8	5	mg/kg	----	<5	<5	----	----	
Lead	7439-92-1	5	mg/kg	----	<5	<5	----	----	
Nickel	7440-02-0	2	mg/kg	----	<2	<2	----	----	
Zinc	7440-66-6	5	mg/kg	----	<5	<5	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	----	----	
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%	0.02	----	----	0.57	0.12	
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	----	<0.5	<0.5	----	----	
Isopropylbenzene	98-82-8	0.5	mg/kg	----	<0.5	<0.5	----	----	
n-Propylbenzene	103-65-1	0.5	mg/kg	----	<0.5	<0.5	----	----	
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	----	<0.5	<0.5	----	----	
sec-Butylbenzene	135-98-8	0.5	mg/kg	----	<0.5	<0.5	----	----	
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	----	<0.5	<0.5	----	----	
tert-Butylbenzene	98-06-6	0.5	mg/kg	----	<0.5	<0.5	----	----	
p-Isopropyltoluene	99-87-6	0.5	mg/kg	----	<0.5	<0.5	----	----	
n-Butylbenzene	104-51-8	0.5	mg/kg	----	<0.5	<0.5	----	----	
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	----	<5	<5	----	----	
2-Butanone (MEK)	78-93-3	5	mg/kg	----	<5	<5	----	----	
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	----	<5	<5	----	----	
2-Hexanone (MBK)	591-78-6	5	mg/kg	----	<5	<5	----	----	
EP074C: Sulfonated Compounds									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW43_2.50	QC15	GW43_4.00	GW50_2.50	GW51_2.10
Client sampling date / time					20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00
Compound	CAS Number	LOR	Unit		EM1704980-004	EM1704980-007	EM1704980-008	EM1704980-012	EM1704980-018
					Result	Result	Result	Result	Result
EP074C: Sulfonated Compounds - Continued									
Carbon disulfide	75-15-0	0.5	mg/kg		----	<0.5	<0.5	----	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		----	<0.5	<0.5	----	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg		----	<0.5	<0.5	----	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		----	<0.5	<0.5	----	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		----	<0.5	<0.5	----	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		----	<0.5	<0.5	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		----	<5	<5	----	----
Chloromethane	74-87-3	5	mg/kg		----	<5	<5	----	----
Vinyl chloride	75-01-4	5	mg/kg		----	<5	<5	----	----
Bromomethane	74-83-9	5	mg/kg		----	<5	<5	----	----
Chloroethane	75-00-3	5	mg/kg		----	<5	<5	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg		----	<5	<5	----	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg		----	<0.5	<0.5	----	----
Iodomethane	74-88-4	0.5	mg/kg		----	<0.5	<0.5	----	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		----	<0.5	<0.5	----	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg		----	<0.5	<0.5	----	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		----	<0.5	<0.5	----	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		----	<0.5	<0.5	----	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg		----	<0.5	<0.5	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		----	<0.5	<0.5	----	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg		----	<0.5	<0.5	----	----
Trichloroethene	79-01-6	0.5	mg/kg		----	<0.5	<0.5	----	----
Dibromomethane	74-95-3	0.5	mg/kg		----	<0.5	<0.5	----	----
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg		----	<0.5	<0.5	----	----
1,3-Dichloropropane	142-28-9	0.5	mg/kg		----	<0.5	<0.5	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg		----	<0.5	<0.5	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	<0.5	<0.5	----	----
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg		----	<0.5	<0.5	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg		----	<0.5	<0.5	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg		----	<0.5	<0.5	----	----
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg		----	<0.5	<0.5	----	----
Pentachloroethane	76-01-7	0.5	mg/kg		----	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW43_2.50	QC15	GW43_4.00	GW50_2.50	GW51_2.10
Client sampling date / time					20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00
Compound	CAS Number	LOR	Unit	EM1704980-004	EM1704980-007	EM1704980-008	EM1704980-012	EM1704980-018	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	----	<0.5	<0.5	----	----	
Hexachlorobutadiene	87-68-3	0.5	mg/kg	----	<0.5	<0.5	----	----	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg	----	<0.5	<0.5	----	----	
Bromobenzene	108-86-1	0.5	mg/kg	----	<0.5	<0.5	----	----	
2-Chlorotoluene	95-49-8	0.5	mg/kg	----	<0.5	<0.5	----	----	
4-Chlorotoluene	106-43-4	0.5	mg/kg	----	<0.5	<0.5	----	----	
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	----	<0.5	<0.5	----	----	
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	----	<0.5	<0.5	----	----	
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	----	<0.5	<0.5	----	----	
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	----	<0.5	<0.5	----	----	
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	----	<0.5	<0.5	----	----	
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg	----	<0.5	<0.5	----	----	
Bromodichloromethane	75-27-4	0.5	mg/kg	----	<0.5	<0.5	----	----	
Dibromochloromethane	124-48-1	0.5	mg/kg	----	<0.5	<0.5	----	----	
Bromoform	75-25-2	0.5	mg/kg	----	<0.5	<0.5	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	----	----	
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	----	----	
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	----	----	
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	----	----	
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	----	----	
Benzo(b+j)fluoranthene	205-99-2	205-82-3	0.5	mg/kg	----	<0.5	----	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	----	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	----	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW43_2.50	QC15	GW43_4.00	GW50_2.50	GW51_2.10
Client sampling date / time					20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00
Compound	CAS Number	LOR	Unit		EM1704980-004	EM1704980-007	EM1704980-008	EM1704980-012	EM1704980-018
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	1.2	1.2	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	<10	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	<50	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	<0.2	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	<1	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	----	83.0	87.8	87.8	----	----
Toluene-D8	2037-26-5	0.5	%	----	91.0	94.5	94.5	----	----
4-Bromofluorobenzene	460-00-4	0.5	%	----	78.1	88.9	88.9	----	----
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW43_2.50	QC15	GW43_4.00	GW50_2.50	GW51_2.10
Client sampling date / time				20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1704980-004	EM1704980-007	EM1704980-008	EM1704980-012	EM1704980-018	
				Result	Result	Result	Result	Result	
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	0.5	%	----	113	112	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	----	93.2	95.0	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	----	96.4	90.6	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	----	106	105	----	----	
Anthracene-d10	1719-06-8	0.5	%	----	109	100	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	----	110	105	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	82.6	86.8	----	----	
Toluene-D8	2037-26-5	0.2	%	----	82.5	85.8	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	----	86.7	90.5	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	GW41_1.80	GW48_3.00	----	----	----
Client sampling date / time			20-Apr-2017 00:00	20-Apr-2017 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EM1704980-021	EM1704980-026	-----	-----	-----
				Result	Result	----	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.06	0.05	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC17	QC18	QC19	----	----
Client sampling date / time				20-Apr-2017 00:00	20-Apr-2017 00:00	20-Apr-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1704980-028	EM1704980-029	EM1704980-030	-----	-----	
				Result	Result	Result	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	----	----	<0.01	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	<0.001	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	<0.001	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	<0.001	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	<0.005	----	----	
Selenium	7782-49-2	0.01	mg/L	----	----	<0.01	----	----	
Iron	7439-89-6	0.05	mg/L	----	----	<0.05	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	----	----	<0.0001	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	95.7	92.2	91.7	----	----	
Toluene-D8	2037-26-5	2	%	102	99.1	95.8	----	----	
4-Bromofluorobenzene	460-00-4	2	%	104	99.1	97.2	----	----	



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	62	122
Toluene-D8	2037-26-5	64	120
4-Bromofluorobenzene	460-00-4	66	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124
Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
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	: EM1704980	Page	: 1 of 15
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 21-Apr-2017
Order number	: task 3.4	Date Analysis Commenced	: 24-Apr-2017
C-O-C number	: ----	Issue Date	: 28-Apr-2017
Sampler	: J Muller		
Site	: Fishermens Bend		
Quote number	: ME/199/16		
No. of samples received	: 30		
No. of samples analysed	: 10		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Andrew Epps	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 854995)									
EM1704958-004	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.9	7.9	0.00	0% - 20%
EM1705037-013	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	6.6	6.8	2.98	0% - 20%
EA055: Moisture Content (QC Lot: 852476)									
EM1704939-003	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	9.2	9.0	1.76	No Limit
EM1705008-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	15.8	17.2	9.01	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 856964)									
EB1708023-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	28	29	5.07	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	19	19	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	8	19.2	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	994	974	2.08	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	55	52	5.31	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	244	208	15.6	0% - 20%
		EG005T: Aluminium	7429-90-5	50	mg/kg	13900	15000	7.64	0% - 20%
EB1708023-061	Anonymous	EG005T: Iron	7439-89-6	50	mg/kg	32100	33800	5.16	0% - 20%
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	20	6.18	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	14	16	8.32	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	80	81	0.00	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	6	6	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	17	19	7.34	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 856964) - continued									
EB1708023-061	Anonymous	EG005T: Aluminium	7429-90-5	50	mg/kg	9920	10000	0.820	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	23000	24800	7.57	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 856965)									
EB1708023-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1708023-061	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 859657)									
EM1704939-014	Anonymous	EP003: Total Organic Carbon	----	0.02	%	<0.02	<0.02	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 853093)									
EM1704939-003	Anonymous	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1705076-220	Anonymous	EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1704939-003	Anonymous	EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
EM1705076-220	Anonymous	EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
EM1704939-003	Anonymous	EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 853093)									
EM1704939-003	Anonymous	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1705076-220	Anonymous	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074D: Fumigants (QC Lot: 853093)									



Sub-Matrix: SOIL				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: 853093) - continued											
EM1704939-003	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EM1705076-220	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP074E: Halogenated Aliphatic Compounds (QC Lot: 853093)											
EM1704939-003	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit		
		EM1705076-220	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				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: 853093) - continued									
EM1705076-220	Anonymous	EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit		
EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit		
EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit		
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 853093)									
EM1704939-003	Anonymous	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1705076-220	Anonymous	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				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: 853093) - continued									
EM1705076-220	Anonymous	EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 853093)									
EM1704939-003	Anonymous	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1705076-220	Anonymous	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 855118)									
EM1704980-007	QC15	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1705037-044	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 855118) - continued									
EM1705037-044	Anonymous	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 853094)									
EM1704939-003	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1705076-220	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 855119)									
EM1704980-007	QC15	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EM1705037-044	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 853094)									
EM1704939-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EM1705076-220	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 855119)									
EM1704980-007	QC15	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EM1705037-044	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 853094)									
EM1704939-003	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				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: 853094) - continued									
EM1704939-003	Anonymous	EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1705076-220	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
	91-20-3	1	mg/kg	<1	<1	0.00	No Limit		
Sub-Matrix: WATER									
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: 857248)									
EM1704980-030	QC19	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1705113-004	Anonymous	EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
		EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0005	0.0004	37.9	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.006	0.005	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	0.003	0.002	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	0.046	0.041	12.5	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.312	0.277	11.9	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.27	0.24	9.83	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 851852)									
EM1704939-034	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1705015-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 851778)									
EM1704939-034	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1705025-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit

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 Work Order : EM1704980
 Client : AECOM Australia Pty Ltd
 Project : 60537182



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 (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 851778)									
EM1704939-034	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1705025-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 851778)									
EM1704939-034	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
EM1705025-004	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: **SOIL**

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	
EG005T: Total Metals by ICP-AES (QCLot: 856964)									
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	6134 mg/kg	106	93	115	
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	92.1	79	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.5	85	109	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	92.8	89	113	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	94.7	84	116	
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	101	95	109	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	94.1	85	107	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	94.4	89	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	96.9	93	109	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	96.6	89	111	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 856965)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	85.8	85	103	
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 859657)									
EP003: Total Organic Carbon	----	0.02	%	<0.02	100 %	98.6	70	130	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 853093)									
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	95.0	77	118	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	105	77	116	
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	106	68	111	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	102	71	111	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	108	69	113	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	103	72	108	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	106	73	111	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	108	70	115	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	# 111	60	110	
EP074B: Oxygenated Compounds (QCLot: 853093)									
EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	10 mg/kg	89.6	63	128	
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	93.8	68	142	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	10 mg/kg	81.2	67	123	
EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	10 mg/kg	95.6	62	128	
EP074C: Sulfonated Compounds (QCLot: 853093)									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	101	50	128	
EP074D: Fumigants (QCLot: 853093)									
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	107	65	115	



Sub-Matrix: SOIL

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	
EP074D: Fumigants (QCLot: 853093) - continued									
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	103	78	116	
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	85.7	64	104	
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	82.1	61	103	
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	89.1	73	117	
EP074E: Halogenated Aliphatic Compounds (QCLot: 853093)									
EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	10 mg/kg	100.0	45	123	
EP074: Chloromethane	74-87-3	5	mg/kg	<5	10 mg/kg	116	55	133	
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	121	58	138	
EP074: Bromomethane	74-83-9	5	mg/kg	<5	10 mg/kg	98.6	43	133	
EP074: Chloroethane	75-00-3	5	mg/kg	<5	10 mg/kg	115	66	126	
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	10 mg/kg	116	64	122	
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	112	68	120	
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	55.2	47	116	
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	110	70	118	
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	107	75	118	
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	110	78	120	
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	107	68	110	
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	108	70	116	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	105	62	111	
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	97.0	69	116	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	104	77	119	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	96.4	74	114	
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	95.6	80	120	
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	98.0	78	120	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	110	73	121	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	90.6	65	109	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	83.1	56	114	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	66.0	40	114	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	90.4	76	124	
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	89.9	75	123	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	86.0	45	123	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	73.8	54	106	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	# 132	60	118	
EP074F: Halogenated Aromatic Compounds (QCLot: 853093)									
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	107	82	117	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	92.2	75	113	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	108	74	113	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	108	72	112	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	106	75	115	



Sub-Matrix: SOIL

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
EP074F: Halogenated Aromatic Compounds (QCLot: 853093) - continued									
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	111	77	120	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	107	81	115	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	116	64	118	
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	117	76	120	
EP074G: Trihalomethanes (QCLot: 853093)									
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	108	77	123	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	90.9	65	107	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	82.7	61	105	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	75.0	54	104	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 855118)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	114	80	121	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	112	70	130	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	111	80	120	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	111	70	124	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	105	80	122	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	108	80	126	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	115	70	128	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	117	80	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	116	70	130	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	120	80	126	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	102	70	124	
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	110	75	125	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	106	65	125	
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	94.7	65	128	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	97.9	65	126	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	87.8	65	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 853094)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	93.5	70	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 855119)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	734 mg/kg	95.7	65	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3091 mg/kg	98.9	70	126	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1507 mg/kg	99.0	70	122	
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 853094)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	91.9	68	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 855119)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1101 mg/kg	95.8	68	130	



Sub-Matrix: **SOIL**

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	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 855119) - continued									
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3914 mg/kg	97.9	72	116	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	283 mg/kg	107	38	132	
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080: BTEXN (QCLot: 853094)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	91.1	74	124	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	96.2	77	125	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	94.4	73	125	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	97.4	77	128	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	99.7	81	128	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	92.6	66	130	

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	
EG020T: Total Metals by ICP-MS (QCLot: 857248)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	103	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	108	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	108	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	106	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	103	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	104	88	113	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	104	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	108	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	106	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	99	110	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 851852)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	103	87	113	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 851778)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	80.8	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 851778)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	83.2	65	125	
EP080: BTEXN (QCLot: 851778)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	97.1	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	98.9	76	124	
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	97.8	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	97.1	78	128	



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: 851778) - continued								
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	94.0	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: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%) Low High	
EG005T: Total Metals by ICP-AES (QCLot: 856964)							
EB1708023-006	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	96.7	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	95.6	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	98.5	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	88.5	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	96.3	76	124
		EG005T: Nickel	7440-02-0	50 mg/kg	97.4	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	91.3	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	99.7	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 856965)							
EB1708023-006	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	96.3	76	116
EP074E: Halogenated Aliphatic Compounds (QCLot: 853093)							
EM1704980-007	QC15	EP074: 1,1-Dichloroethene	75-35-4	2 mg/kg	106	29	141
		EP074: Trichloroethene	79-01-6	2 mg/kg	90.4	50	126
EP074F: Halogenated Aromatic Compounds (QCLot: 853093)							
EM1704980-007	QC15	EP074: Chlorobenzene	108-90-7	2 mg/kg	100	65	133
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 855118)							
EM1704981-034	Anonymous	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	109	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	117	52	148
EP080/071: Total Petroleum Hydrocarbons (QCLot: 853094)							
EM1704980-007	QC15	EP080: C6 - C9 Fraction	----	28 mg/kg	77.0	42	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 855119)							
EM1704980-008	GW43_4.00	EP071: C10 - C14 Fraction	----	734 mg/kg	99.1	53	123
		EP071: C15 - C28 Fraction	----	3091 mg/kg	98.3	70	124
		EP071: C29 - C36 Fraction	----	1507 mg/kg	98.4	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 853094)							
EM1704980-007	QC15	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	74.2	39	129



Sub-Matrix: **SOIL**

				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 Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 855119)							
EM1704980-008	GW43_4.00	EP071: >C10 - C16 Fraction	----	1101 mg/kg	97.0	65	123
		EP071: >C16 - C34 Fraction	----	3914 mg/kg	97.2	67	121
		EP071: >C34 - C40 Fraction	----	283 mg/kg	107	44	126
EP080: BTEXN (QCLot: 853094)							
EM1704980-007	QC15	EP080: Benzene	71-43-2	2 mg/kg	90.7	50	136
		EP080: Toluene	108-88-3	2 mg/kg	91.9	56	139

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: 857248)							
EM1704980-030	QC19	EG020A-T: Arsenic	7440-38-2	1 mg/L	107	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	104	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	109	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	101	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	111	83	121
		EG020A-T: Nickel	7440-02-0	1 mg/L	103	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	106	74	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 851852)							
EM1704958-007	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	96.4	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 851778)							
EM1704939-035	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	61.7	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 851778)							
EM1704939-035	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	62.2	44	122
EP080: BTEXN (QCLot: 851778)							
EM1704939-035	Anonymous	EP080: Benzene	71-43-2	20 µg/L	81.7	68	130
		EP080: Toluene	108-88-3	20 µg/L	86.0	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1704980	Page	: 1 of 8
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 21-Apr-2017
Site	: Fishermens Bend	Issue Date	: 28-Apr-2017
Sampler	: J Muller	No. of samples received	: 30
Order number	: task 3.4	No. of samples analysed	: 10

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

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP074A: Monocyclic Aromatic Hydrocarbons	QC-853093-001	----	n-Butylbenzene	104-51-8	111 %	60-110%	Recovery greater than upper control limit
EP074E: Halogenated Aliphatic Compounds	QC-853093-001	----	Hexachlorobutadiene	87-68-3	132 %	60-118%	Recovery greater than upper control limit

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: **SOIL**

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	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) QC15,	GW43_4.00	20-Apr-2017	26-Apr-2017	27-Apr-2017	✓	26-Apr-2017	26-Apr-2017	✓
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103) QC15,	GW43_4.00	20-Apr-2017	----	----	----	24-Apr-2017	04-May-2017	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) QC15,	GW43_4.00	20-Apr-2017	27-Apr-2017	17-Oct-2017	✓	27-Apr-2017	17-Oct-2017	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) QC15,	GW43_4.00	20-Apr-2017	27-Apr-2017	18-May-2017	✓	28-Apr-2017	18-May-2017	✓
EP003: Total Organic Carbon (TOC) in Soil								
Soil Glass Jar - Unpreserved (EP003) GW43_2.50, GW51_2.10, GW48_3.00	GW50_2.50, GW41_1.80,	20-Apr-2017	28-Apr-2017	18-May-2017	✓	28-Apr-2017	18-May-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074) QC15,	GW43_4.00	20-Apr-2017	24-Apr-2017	27-Apr-2017	✓	26-Apr-2017	27-Apr-2017	✓
EP074B: Oxygenated Compounds								
Soil Glass Jar - Unpreserved (EP074) QC15,	GW43_4.00	20-Apr-2017	24-Apr-2017	27-Apr-2017	✓	26-Apr-2017	27-Apr-2017	✓



Matrix: **SOIL**

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
EP074C: Sulfonated Compounds							
Soil Glass Jar - Unpreserved (EP074) QC15, GW43_4.00	20-Apr-2017	24-Apr-2017	27-Apr-2017	✓	26-Apr-2017	27-Apr-2017	✓
EP074D: Fumigants							
Soil Glass Jar - Unpreserved (EP074) QC15, GW43_4.00	20-Apr-2017	24-Apr-2017	27-Apr-2017	✓	26-Apr-2017	27-Apr-2017	✓
EP074E: Halogenated Aliphatic Compounds							
Soil Glass Jar - Unpreserved (EP074) QC15, GW43_4.00	20-Apr-2017	24-Apr-2017	27-Apr-2017	✓	26-Apr-2017	27-Apr-2017	✓
EP074F: Halogenated Aromatic Compounds							
Soil Glass Jar - Unpreserved (EP074) QC15, GW43_4.00	20-Apr-2017	24-Apr-2017	27-Apr-2017	✓	26-Apr-2017	27-Apr-2017	✓
EP074G: Trihalomethanes							
Soil Glass Jar - Unpreserved (EP074) QC15, GW43_4.00	20-Apr-2017	24-Apr-2017	27-Apr-2017	✓	26-Apr-2017	27-Apr-2017	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) QC15, GW43_4.00	20-Apr-2017	26-Apr-2017	04-May-2017	✓	27-Apr-2017	05-Jun-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) QC15, GW43_4.00	20-Apr-2017	24-Apr-2017	04-May-2017	✓	26-Apr-2017	04-May-2017	✓
Soil Glass Jar - Unpreserved (EP071) QC15, GW43_4.00	20-Apr-2017	26-Apr-2017	04-May-2017	✓	27-Apr-2017	05-Jun-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) QC15, GW43_4.00	20-Apr-2017	24-Apr-2017	04-May-2017	✓	26-Apr-2017	04-May-2017	✓
Soil Glass Jar - Unpreserved (EP071) QC15, GW43_4.00	20-Apr-2017	26-Apr-2017	04-May-2017	✓	27-Apr-2017	05-Jun-2017	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) QC15, GW43_4.00	20-Apr-2017	24-Apr-2017	04-May-2017	✓	26-Apr-2017	04-May-2017	✓

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
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) QC19	20-Apr-2017	27-Apr-2017	17-Oct-2017	✓	27-Apr-2017	17-Oct-2017	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) QC19	20-Apr-2017	----	----	----	24-Apr-2017	18-May-2017	✓



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) QC17, QC19	QC18,	20-Apr-2017	26-Apr-2017	04-May-2017	✓	26-Apr-2017	04-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber VOC Vial - Sulfuric Acid (EP080) QC17, QC19	QC18,	20-Apr-2017	26-Apr-2017	04-May-2017	✓	26-Apr-2017	04-May-2017	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) QC17, QC19	QC18,	20-Apr-2017	26-Apr-2017	04-May-2017	✓	26-Apr-2017	04-May-2017	✓



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: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	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-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.26	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-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.26	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-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.26	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-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	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	Reaular	Actual	Expected	Evaluation	
Analytical Methods							



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 Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	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 in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Higginson 4B1 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	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. Mercury in solids are determined following an appropriate acid digestion. 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 Organic Carbon	EP003	SOIL	In house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red detector.
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds	EP074	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
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.
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)



Analytical Methods	Method	Matrix	Method Descriptions
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
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Dry and Pulverise (up to 100g)	GEO30	SOIL	#
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
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)
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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1704980

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 3
Order number	: ----	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermens Bend		
Sampler	: J Muller		

Dates

Date Samples Received	: 21-Apr-2017 09:40	Issue Date	: 22-Apr-2017
Client Requested Due Date	: 02-May-2017	Scheduled Reporting Date	: 02-May-2017

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 1.1°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 30 / 10

General Comments

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



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA001 pH (CaCl)	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP003 Total Organic Carbon (TOC) in Soil	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-10 TRH/VOC/PAH
EM1704980-001	20-Apr-2017 00:00	GW43_1.70	✓						
EM1704980-002	20-Apr-2017 00:00	GW43_1.80	✓						
EM1704980-003	20-Apr-2017 00:00	GW43_2.00	✓						
EM1704980-004	20-Apr-2017 00:00	GW43_2.50					✓		
EM1704980-005	20-Apr-2017 00:00	GW43_3.00	✓						
EM1704980-006	20-Apr-2017 00:00	GW43_3.50	✓						
EM1704980-007	20-Apr-2017 00:00	QC15		✓	✓	✓		✓	✓
EM1704980-008	20-Apr-2017 00:00	GW43_4.00		✓	✓	✓		✓	✓
EM1704980-009	20-Apr-2017 00:00	GW43_4.90	✓						
EM1704980-010	20-Apr-2017 00:00	GW50_1.50	✓						
EM1704980-011	20-Apr-2017 00:00	GW50_2.00	✓						
EM1704980-012	20-Apr-2017 00:00	GW50_2.50					✓		
EM1704980-013	20-Apr-2017 00:00	GW50_3.00	✓						
EM1704980-014	20-Apr-2017 00:00	GW50_3.10	✓						
EM1704980-015	20-Apr-2017 00:00	GW50_4.90	✓						
EM1704980-016	20-Apr-2017 00:00	GW51_1.50	✓						
EM1704980-017	20-Apr-2017 00:00	GW51_2.00	✓						
EM1704980-018	20-Apr-2017 00:00	GW51_2.10					✓		
EM1704980-019	20-Apr-2017 00:00	GW51_4.90	✓						
EM1704980-020	20-Apr-2017 00:00	GW41_1.50	✓						
EM1704980-021	20-Apr-2017 00:00	GW41_1.80					✓		
EM1704980-022	20-Apr-2017 00:00	GW41_5.00	✓						
EM1704980-023	20-Apr-2017 00:00	GW48_1.50	✓						
EM1704980-024	20-Apr-2017 00:00	GW48_1.90	✓						
EM1704980-025	20-Apr-2017 00:00	GW48_2.00	✓						
EM1704980-026	20-Apr-2017 00:00	GW48_3.00					✓		
EM1704980-027	20-Apr-2017 00:00	GW48_4.50	✓						



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - W-02T 8 metals (Total)	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1704980-028	20-Apr-2017 00:00	QC17			✓
EM1704980-029	20-Apr-2017 00:00	QC18			✓
EM1704980-030	20-Apr-2017 00:00	QC19	✓	✓	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email

AP_CustomerService.ANZ@aecom.com

AVERYLL COYNE

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - HLAPro (HLAPro)
- EDI Format - XTab (XTAB)

Email

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averyll.coyne@aecom.com

ANZ
FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MULLEN		Destination Laboratory	
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0409536240		PHONE:	
PROJECT NUMBER & TASK CODE: 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE		ALS	
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:					
COOLER SEAL (circle appropriate)							
Intact: Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED: Yes No		Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.					
SAMPLE INFORMATION (note: S = Soil, W=Water)							
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	GW43-1.70	S	20/4/17		250ml Jar	1	X
	GW43-1.80						
	GW43-2.00						
	GW43-2.50						
	GW43-3.00						
	GW43-3.50						
	QC15-				250ml Jar	2	
	QC16				250ml Jar	3	
	GW43-4.00				250ml Jar	1	
	GW43-4.90						
	GW50-1.50						
	GW50-2.00						
	GW50-2.50						
	GW50-3.00						
	GW50-3.10						
	GW50-4.90						
	GW51-1.50						
	GW51-2.00						
	GW51-2.10						
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name: JM		Name:		Name: M...		Con' Note No:	
Of: AECOM		Of:		Of: ku		Transport Co.:	
Date: 20/4		Date:		Date: 20/4			
Time: 1700		Time:		Time: 9:00			

Environmental Division
Melbourne
Work Order Reference
EM1704980



Telephone : + 61-3-8549 9600

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: <u>S. MULLER</u>		Destination Laboratory		
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0409536240</u> PHONE:		ALS		
PROJECT NUMBER & TASK COI <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>				
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)								
Intact: Yes No N/A								
SAMPLE TEMPERATURE								
CHILLED: Yes No								
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD	
	<u>GW51-4.90</u>	<u>S</u>	<u>20/4/17</u>		<u>280ml Jar</u>	<u>1</u>	<u>X</u>	
	<u>GW41-1.50</u>							
	<u>GW41-1.80</u>							
	<u>GW41-5.00</u>							
	<u>GW48-1.50</u>							
	<u>GW48-1.90</u>							
	<u>GW48-2.00</u>							
	<u>GW48-3.00</u>							
	<u>GW48-4.50</u>	<u>↓</u>			<u>↓</u>	<u>↓</u>	<u>↓</u>	
	<u>QC17</u>	<u>W</u>			<u>TRIP BLANK</u>			
	<u>QC18</u>	<u>↓</u>			<u>TRIP BLANK</u>			
	<u>QC19</u>	<u>↓</u>			<u>2 purple Vial Metals</u>			
							<u>TRIP BLANK</u>	
							<u>TRIP BLANK</u>	
							<u>Rinsate</u>	
RELINQUISHED BY:			RECEIVED BY:			RECEIVED BY:		METHOD OF SHIPMENT
Name: <u>JM AECOM</u>		Date: <u>20/4</u>		Name:		Date: <u>21/4</u>		Con' Note No:
Of:		Time: <u>1700</u>		Of:		Time: <u>9:40</u>		Transport Co:
<p>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</p> <p>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;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.</p> <p>Soil Container Codes: Jar = Unpreserved glass jar</p>								

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: <u>J. MULLER</u>		Destination Laboratory ALS	
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0409536240</u> PHONE:			
PROJECT NUMBER & TASK COI: <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:					
COOLER SEAL (circle appropriate)							
Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>							
SAMPLE TEMPERATURE							
CHILLED: Yes <input type="checkbox"/> No <input type="checkbox"/>							
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	<u>GW51-4.90</u>	<u>S</u>	<u>20/4/17</u>		<u>280ml Jar</u>	<u>1</u>	<u>X</u>
	<u>GW41-1.50</u>						
	<u>GW41-1.80</u>						
	<u>GW41-5.00</u>						
	<u>GW48-1.50</u>						
	<u>GW48-1.90</u>						
	<u>GW48-2.00</u>						
	<u>GW48-3.00</u>						
	<u>GW48-4.50</u>	<u>↓</u>			<u>↓</u>	<u>↓</u>	<u>↓</u>
	<u>QC17</u>	<u>W</u>			<u>TRIP BLANK</u>		
	<u>QC18</u>	<u>↓</u>			<u>TRIP BLANK</u>		<u>TRIP BLANK</u>
	<u>QC19</u>	<u>↓</u>			<u>2 purple Vial Metals</u>		<u>Rinsate</u>
RELINQUISHED BY:			RECEIVED BY:			RECEIVED BY:	
Name: <u>JM</u>		Date: <u>20/4</u>		Name: <u>AKM</u>		Date: <u>21/4</u>	
Of: <u>AECOM</u>		Time: <u>1700</u>		Of: <u>AKM</u>		Time: <u>9:40</u>	
						METHOD OF SHIPMENT	
						Con' Note No:	
						Transport Co:	

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Soil Container Codes: Jar = Unpreserved glass jar

Analysis rec'd 21/4/17 3:13 pm - ALS PR

ANZ
FORM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT		ADDRESS / OFFICE		SAMPLER		Destination Laboratory	
PROJECT MANAGER (PM) Averyll Coyne		SITE Fishermens Bend		SAMPLER J. MULLER		ALS	
PROJECT NUMBER & TASK CODE 60537182		P.O. NO.		MOBILE: 0409536240		PHONE:	
RESULTS REQUIRED (Date)		QUOTE NO.		EMAIL REPORT TO: AVEYLL COYNE			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL					
COOLER SEAL (circle appropriate)							
Intact Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED Yes No							
SAMPLE INFORMATION (note: for Soil, Wet Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
1	GW43-1.70	S	20/4/17		250ml Jar	1	
2	GW43-1.80						
3	GW43-2.00						
4	GW43-2.50						
5	GW43-3.00						
6	GW43-3.50						
7	QC15						
8	GW43-4.00						
9	GW43-4.40						
10	GW50-1.50						
11	GW50-2.00						
12	GW50-2.50						
13	GW50-3.00						
14	GW50-3.10						
15	GW50-3.10						
16	GW51-1.50						
17	GW51-2.00						
18	GW51-2.10						

TOC
METALS
PH
PFH
TOH (C6-C10)
TOH (C6-C7)
VOC (EPA 8)
H4WD

Notes: e.g. Highly contaminated sample
e.g. "High PAHs expected".
Extra volume for QC or trace LORs etc.

METALS - As, Cd, Cr,
Cu, Pb, Ni, Zn, Al,
Fe, Se, Hg

↓

RELINQUISHED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name: JM	Date: 20/4	Name:	Date:	Name: Worm	Date: 21/4		
Of: AECOM	Time: 13:00	Of:	Time:	Of: fm	Time: 9:00	Con' Note No: Transport Co:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; OPC = Nitric Preserved OPC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic
 V = VOA Vial HCl Preserved; VP = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic
 Z = Zinc Acetate Preserved Bottle; T = EDTA Preserved Bottle; ST = Sterile Bottle; ASG = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag
 Soil Container Codes: Jar = Unpreserved glass jar

ANZ
FORM - Generic Chain of Custody Form

CONSULTANT		ADDRESS / OFFICE		SAMPLER: <u>S. MULLER</u>		Destination Laboratory																												
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0409536240</u>		PHONE:																												
PROJECT NUMBER & TASK CODE: <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERTLL COYNE</u>		ALS																												
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices):																														
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:																																
COOLER SEAL (circle appropriate)																																		
Intact Yes No N/A																																		
SAMPLE TEMPERATURE																																		
CHILLED Yes No		<table border="1"> <tr> <td>TOC</td> <td>MEALS</td> <td>H₂O₂</td> <td>PAH</td> <td>TRA (COP)</td> <td>TRA (COP)</td> <td>VOC ESOP4</td> <td>WORLD</td> <td>PTEN2</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						TOC	MEALS	H ₂ O ₂	PAH	TRA (COP)	TRA (COP)	VOC ESOP4	WORLD	PTEN2																		
TOC	MEALS							H ₂ O ₂	PAH	TRA (COP)	TRA (COP)	VOC ESOP4	WORLD	PTEN2																				
Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.																																		
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION																														
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles																												
19	GW51-4.90	S	20/4/17		280ml Jar	1																												
20	GW41-1.50																																	
21	GW41-1.80																																	
22	GW41-5.00																																	
23	GW48-1.50																																	
24	GW48-1.90																																	
25	GW48-2.00																																	
26	GW48-3.00																																	
27	GW48-4.50				P																													
28	QC17	W			TRIP BLANK																													
29	QC18				TRIP BLANK																													
30	QC19				2 Purple Vial Metals																													
SEIGNISHED BY: <u>JM AECOM</u>		RECEIVED BY: <u>[Signature]</u>		RECEIVED BY: <u>[Signature]</u>		METHOD OF SHIPMENT																												
Date: <u>20/4</u>		Date: <u>20/4</u>		Date: <u>20/4</u>		Con' Note No:																												
Time: <u>17:30</u>		Time: <u>17:30</u>		Time: <u>9:40</u>		Transport Co:																												
<p>Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; OPC = Nitric Preserved CRC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airtight Unpreserved Plastic</p> <p>W = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisophate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial; ES = Sulfuric Preserved; Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Spills; U = Unpreserved Bag</p> <p>Soil Container Codes: Jar = Unpreserved glass jar</p>																																		

TRIP BLANK
 TRIP BLANK
 Rinseate

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MULLER		Destination Laboratory		
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0409536240		PHONE:		
PROJECT NUMBER & TASK COI 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE		ALS		
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY:		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)								
Intact: Yes No N/A								
SAMPLE TEMPERATURE								
CHILLED: Yes No								
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION				HOLD X SCANNED
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
	GW82 - 2.00	S	24/4/17		250ml Jar	1		
	GW82 - 2.50							
	GW82 - 3.00							
	GW82 - 3.50							
	GW82 - 4.00							
	GW82 - 4.50							
	GW82 - 4.90							
	GW72 - 2.00							
	GW72 - 2.50							
	GW72 - 3.00							
	GW72 - 4.00							
	GW72 - 4.50							
	GW72 - 4.90							
	GW81 - 2.50							
	GW81 - 3.50							
	GW81 - 4.00							
	GW81 - 4.90							
	GW80 - 2.50							
	GW80 - 3.00							
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT		
Name: Jacob Muller		Name:		Name: Bharathi		Con' Note No:		
Date: 24/4/17		Date:		Date: 24/4/17		Transport Co:		
Of: AECOM		Of:		Of: ALS		Time: 12 p		
Time: 7:30		Time:		Time:				
<p>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</p> <p>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;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.</p> <p style="text-align: right;">Soil Container Codes: Jar = Unpreserved glass jar</p>								

Environmental Division
Melbourne
Work Order Reference
EM1705075



Telephone : + 61-3-8549 9600

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: PROJECT MANAGER (PM): Averyll Coyne		ADDRESS / OFFICE: SITE: Fishermens Bend		SAMPLER: I. MULLER		Destination Laboratory ALS		
PROJECT NUMBER & TASK COI 60537182		P.O. NO.:		MOBILE: 0409536240		PHONE:		
RESULTS REQUIRED (Date):		QUOTE NO.:		EMAIL REPORT TO: AVERYLL COYNE		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)		
FOR LABORATORY USE ONLY COOLER SEAL (circle appropriate) Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
SAMPLE TEMPERATURE CHILLED: Yes <input type="checkbox"/> No <input type="checkbox"/>								
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD	
	GW80-3.50	S	21/4/17		250ml Jar	1	X	
	GW80-4.50							
	GW80-4.90							
	GW40-1.50							
	GW40-3.00							
	GW40-4.50							
	GW53-1.50							
	GW53-2.00							
	GW53-2.50							
	GW53-3.00							
	GW52-1.50							
	GW52-2.00							
	GW52-2.50							
	GW52-3.00							
	GW52-3.70							
	GW52-4.50							
	GW47-1.50							
	GW47-1.90							
	GW47-3.00							
RELINQUISHED BY: Name: Jacob Muller Of: AECOM		RECEIVED BY: Name: _____ Of: _____		RECEIVED BY: Name: Bharatu Of: ALS		METHOD OF SHIPMENT Con' Note No: Transport Co:		
Date: 25/4/17 Time: 7:30		Date: _____ Time: _____		Date: 24/4 Time: 12				

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
Soil Container Codes: Jar = Unpreserved glass jar

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MULLER		Destination Laboratory ALS			
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0409536240				PHONE:	
PROJECT NUMBER & TASK COI: 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE					
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)					
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.	
COOLER SEAL (if applicable)									
Intact: Yes No N/A									
SAMPLE TEMPERATURE									
CHILLED: Yes No		SAMPLE INFORMATION (note: S = Soil, W=Water)		CONTAINER INFORMATION				HOLD	
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles			
	6W47-4.50	S	24/4/17		250ml Jar	1			
	QC17				1 metals 2 purple vials	1+2			
	QC18				Trip blank	1			
	QC19				Trip blank	1			
RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT			
Name: Jacob Muller		Name:		Name: Shanathi		Con' Note No:			
Date: 24/4/17		Date:		Date: 24/4		Transport Co:			
Of: AECOM		Of:		Of: ALS					
Time: 2:30		Time:		Time: 12 p					

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

Analysis received at 16:30 20/4

CONSULTANT: Averyll Coyne		ADDRESS / OFFICE: Fishermans Bend		SAMPLER: [Handwritten]		Destination Laboratory: ALS	
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermans Bend		MOBILE: [Handwritten]		PHONE: [Handwritten]	
PROJECT NUMBER & TASK COI: 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:				Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.	
COOLER SEAL (circle appropriate):							
Intact: Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED: Yes No							
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
1	GW82 - 2.00	S	20/4/17		30ml jar	1	X
2	GW82 - 2.50						X
3	GW82 - 3.00						X
4	GW82 - 3.50						X
5	GW82 - 4.00						X
6	GW82 - 4.50						X
7	GW82 - 5.00						X
8	GW82 - 2.00						X
9	GW82 - 2.50						X
10	GW82 - 3.00						X
11	GW82 - 3.50						X
12	GW82 - 4.00 3:50						X
13	GW82 - 4.50						X
14	GW82 - 5.00						X
15	GW81 - 3.00						X
16	GW81 - 4.00						X
17	GW81 - 5.00						X
18	GW80 - 2.50						X
19	GW80 - 3.00						X
RELINQUISHED BY: [Signature]				RECEIVED BY: [Signature]		RECEIVED BY: [Signature]	
Name: [Signature]		Date: 20/4/17		Name: [Signature]		Date: 20/4/17	
Of: ALS		Time: 7:30		Of: ALS		Time: 12:00	
METHOD OF SHIPMENT				Con' Note No:			
				Transport Co:			

ANZ

FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: <u>I. MULLER</u>		Destination Laboratory		
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0409536240</u>		ALS		
PROJECT NUMBER & TASK COI: <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>				
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STOPAGE OR DISPOSAL						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)								
Impact: Yes No N/A								
SAMPLE TEMPERATURE								
Chilled: Yes No								
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
20	GW80-3.50	S	2/4/17		250ml Jar	1		
21	GW80-4.50							
22	GW80-4.90							
23	GW40-1.50							
24	GW40-3.00							
25	GW40-4.50							
26	GW53-1.50							
27	GW53-2.00							
28	GW53-2.50							
29	GW53-3.00							
30	GW52-1.50							
31	GW52-2.00							
32	GW52-2.50							
33	GW52-3.00							
34	GW52-3.50							
35	GW52-4.50							
36	GW47-1.50							
37	GW47-1.90							
38	GW47-3.00							
RELINQUISHED BY:				RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT
Name: <u>Jacob Muller</u>		Date: <u>2/4/17</u>		Name: <u>Bharathi</u>		Date: <u>2/4/17</u>		Con' Note No:
Of: <u>ALS</u>		Time: <u>7:00</u>		Of: <u>ALS</u>		Time: <u>12</u>		Transport Co:

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MILLER		Destination Laboratory			
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0409936240		ALS			
PROJECT NUMBER & TASK COI 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE					
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)					
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL				Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.			
COOLER SEAL (circle appropriate)		HOLD TPH (C6-C8) PCB (C6-C7) BTEX METALS						HOLD METALS: As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg	
Intact Yes No N/A									
SAMPLE TEMPERATURE									
CHILLED Yes No									
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION					
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles			
39	GW47-4.50	S	20/4/17		250ml Jar	1	X		
40	QC17				Intact, 2 purple	1+2	X		
41	QC18				Trip blank	1	X		
42	QC19				Trip blank	1	X		
EXTRA sample		Am 27/4							
43	GW53-4.5		21/4/17						
RELINQUISHED BY:				RECEIVED BY:					
Name: Jacob Miller		Date: 24/4/17		Name: B. Smith		Date: 24/4			
Of: AECOM		Time: 2:30		Of: ALS		Time: 12 p			
METHOD OF SHIPMENT				Con' Note No:					
				Transport Co:					

Peter Ravlic

From: Coyne, Averyll <Averyll.Coyne@aecom.com>
Sent: Wednesday, 26 April 2017 4:30 PM
To: Peter Ravlic
Subject: RE: ON HOLD - EM1705075 - AECOM Project: 60537182
Attachments: SKM_C554e17042616330.pdf

Hi Peter,

Please see attached the updated COC.

Kind Regards
Averyll

Averyll Coyne
Principal Environmental Scientist
D +61 3 9653 8072 M +61 499 252 502
Averyll.Coyne@aecom.com

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Collins Square, Level 10, Tower Two, 727 Collins Street, Melbourne, VIC 3008
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From: Peter Ravlic [<mailto:peter.ravlic@alsglobal.com>]
Sent: Monday, 24 April 2017 12:24 PM
To: Coyne, Averyll
Subject: FW: ON HOLD - EM1705075 - AECOM Project: 60537182

Hi Averyll

FYI, the attached samples have been rec'd on hold

Thanks

Regards

Peter Ravlic

Client Services Officer – Springvale
Environmental



T +61 3 8549 9600
F +61 3 8549 9626
Peter.Ravlic@alsglobal.com
2-4 Westall Rd
Springvale Vic 3171
Australia

CERTIFICATE OF ANALYSIS

Work Order : **EM1705075**
Client : **AECOM Australia Pty Ltd**
Contact : **MS AVERYLL COYNE**
Address : **COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET
MELBOURNE VIC, AUSTRALIA 3000**
Telephone : **+61 03 9653 1234**
Project : **60537182**
Order number : **task 3.4**
C-O-C number : **----**
Sampler : **SM**
Site : **Fishermens Bend**
Quote number : **EN/004/16**
No. of samples received : **43**
No. of samples analysed : **11**

Page : 1 of 6
Laboratory : Environmental Division Melbourne
Contact : Carol Walsh
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9608
Date Samples Received : 24-Apr-2017 12:00
Date Analysis Commenced : 27-Apr-2017
Issue Date : 02-May-2017 18:03



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Andrew Epps	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	GW82_2.50	GW72_3.00	GW81_3.50	GW80_3.00	GW40_3.00
Client sampling date / time			21-Apr-2017 00:00	21-Apr-2017 00:00	21-Apr-2017 00:00	21-Apr-2017 00:00	21-Apr-2017 00:00	21-Apr-2017 00:00
Compound	CAS Number	LOR	Unit	EM1705075-002	EM1705075-010	EM1705075-015	EM1705075-019	EM1705075-024
				Result	Result	Result	Result	Result
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.28	0.42	0.20	0.03	0.21



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	GW53_3.00	GW52_3.00	GW47_3.00	----	----
Client sampling date / time			21-Apr-2017 00:00	21-Apr-2017 00:00	21-Apr-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1705075-029	EM1705075-033	EM1705075-038	-----	-----
				Result	Result	Result	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.05	0.03	<0.02	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC17	QC18	QC19	----	----
Client sampling date / time				21-Apr-2017 00:00	21-Apr-2017 00:00	21-Apr-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1705075-040	EM1705075-041	EM1705075-042	-----	-----	
				Result	Result	Result	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	92.6	94.9	93.5	----	----	
Toluene-D8	2037-26-5	2	%	78.3	88.5	83.8	----	----	
4-Bromofluorobenzene	460-00-4	2	%	103	111	109	----	----	



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
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	: EM1705075	Page	: 1 of 5
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 24-Apr-2017
Order number	: task 3.4	Date Analysis Commenced	: 27-Apr-2017
C-O-C number	: ----	Issue Date	: 02-May-2017
Sampler	: SM		
Site	: Fishermens Bend		
Quote number	: EN/004/16		
No. of samples received	: 43		
No. of samples analysed	: 11		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Andrew Epps	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 864142)									
EB1708075-020	Anonymous	EP003: Total Organic Carbon	----	0.02	%	0.36	0.36	0.00	0% - 50%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 857781)									
EM1705075-040	QC17	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EM1705136-010	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	0.006	0.007	20.3	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.010	0.013	26.7	0% - 50%
		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	0.015	0.017	7.86	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	1.49	1.60	7.21	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	1.46	1.56	7.02	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 (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 857253)									
EM1705075-040	QC17	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 858954)									
EM1705075-040	QC17	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1705188-008	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 858954)									
EM1705075-040	QC17	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1705188-008	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 858954)									
EM1705075-040	QC17	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
EM1705188-008	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: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 864142)								
EP003: Total Organic Carbon	----	0.02	%	<0.02	100 %	109	70	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
EG020T: Total Metals by ICP-MS (QCLot: 857781)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	105	100	110
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	105	94	113
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	101	88	110
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	100	87	112
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	100	87	112
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.4	88	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.2	91	111
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	102	86	110
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.8	88	112
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	105	99	110
EG035T: Total Recoverable Mercury by FIMS (QCLot: 857253)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	88.4	87	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 858954)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	106	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 858954)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	102	65	125
EP080: BTEXN (QCLot: 858954)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	101	76	120
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	108	76	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	102	72	124
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	112	72	130
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	113	78	128
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	87.5	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

				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: 857781)							
EM1705075-040	QC17	EG020A-T: Arsenic	7440-38-2	1 mg/L	104	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	94.7	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	95.7	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	100.0	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	94.3	83	121
		EG020A-T: Nickel	7440-02-0	1 mg/L	109	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	103	74	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 857253)							
EM1705177-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	89.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 858954)							
EM1705188-001	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	90.6	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 858954)							
EM1705188-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	89.7	44	122
EP080: BTEXN (QCLot: 858954)							
EM1705188-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	98.8	68	130
		EP080: Toluene	108-88-3	20 µg/L	78.8	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1705075	Page	: 1 of 4
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 24-Apr-2017
Site	: Fishermens Bend	Issue Date	: 02-May-2017
Sampler	: SM	No. of samples received	: 43
Order number	: task 3.4	No. of samples analysed	: 11

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.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



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: **SOIL**

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	
EP003: Total Organic Carbon (TOC) in Soil								
Soil Glass Jar - Unpreserved (EP003)								
GW82_2.50, GW81_3.50, GW40_3.00, GW52_3.00	GW72_3.00, GW80_3.00, GW53_3.00, GW47_3.00	21-Apr-2017	02-May-2017	19-May-2017	✓	02-May-2017	19-May-2017	✓

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	
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T)								
QC17		21-Apr-2017	27-Apr-2017	18-Oct-2017	✓	28-Apr-2017	18-Oct-2017	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T)								
QC17		21-Apr-2017	----	----	----	27-Apr-2017	19-May-2017	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP080)								
QC17, QC19	QC18,	21-Apr-2017	28-Apr-2017	05-May-2017	✓	28-Apr-2017	05-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber VOC Vial - Sulfuric Acid (EP080)								
QC17, QC19	QC18,	21-Apr-2017	28-Apr-2017	05-May-2017	✓	28-Apr-2017	05-May-2017	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
QC17, QC19	QC18,	21-Apr-2017	28-Apr-2017	05-May-2017	✓	28-Apr-2017	05-May-2017	✓



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: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Total Organic Carbon	EP003	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Organic Carbon	EP003	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Organic Carbon	EP003	1	10	10.00	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	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	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
Total Organic Carbon	EP003	SOIL	In house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red 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.
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)
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
Dry and Pulverise (up to 100g)	GEO30	SOIL	#
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)
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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1705075

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 3
Order number	: ----	Quote number	: EB2015AECOMAU0580 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermens Bend		
Sampler	: SM		

Dates

Date Samples Received	: 24-Apr-2017 12:00	Issue Date	: 27-Apr-2017
Client Requested Due Date	: 03-May-2017	Scheduled Reporting Date	: 03-May-2017

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 43 / 11

General Comments

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



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Head) SOIL No analysis requested	SOIL - EP003 Total Organic Carbon (TOC) in Soil
EM1705075-001	21-Apr-2017 00:00	GW82_2.00	✓	
EM1705075-002	21-Apr-2017 00:00	GW82_2.50		✓
EM1705075-003	21-Apr-2017 00:00	GW82_3.00	✓	
EM1705075-004	21-Apr-2017 00:00	GW82_3.50	✓	
EM1705075-005	21-Apr-2017 00:00	GW82_4.00	✓	
EM1705075-006	21-Apr-2017 00:00	GW82_4.50	✓	
EM1705075-007	21-Apr-2017 00:00	GW82_4.90	✓	
EM1705075-008	21-Apr-2017 00:00	GW72_2.00	✓	
EM1705075-009	21-Apr-2017 00:00	GW72_2.50	✓	
EM1705075-010	21-Apr-2017 00:00	GW72_3.00		✓
EM1705075-011	21-Apr-2017 00:00	GW72_4.00	✓	
EM1705075-012	21-Apr-2017 00:00	GW72_4.50	✓	
EM1705075-013	21-Apr-2017 00:00	GW72_4.90	✓	
EM1705075-014	21-Apr-2017 00:00	GW81_2.50	✓	
EM1705075-015	21-Apr-2017 00:00	GW81_3.50		✓
EM1705075-016	21-Apr-2017 00:00	GW81_4.00	✓	
EM1705075-017	21-Apr-2017 00:00	GW81_4.90	✓	
EM1705075-018	21-Apr-2017 00:00	GW80_2.50	✓	
EM1705075-019	21-Apr-2017 00:00	GW80_3.00		✓
EM1705075-020	21-Apr-2017 00:00	GW80_3.50	✓	
EM1705075-021	21-Apr-2017 00:00	GW80_4.50	✓	
EM1705075-022	21-Apr-2017 00:00	GW80_4.90	✓	
EM1705075-023	21-Apr-2017 00:00	GW40_1.50	✓	
EM1705075-024	21-Apr-2017 00:00	GW40_3.00		✓
EM1705075-025	21-Apr-2017 00:00	GW40_4.50	✓	
EM1705075-026	21-Apr-2017 00:00	GW53_1.50	✓	
EM1705075-027	21-Apr-2017 00:00	GW53_2.00	✓	
EM1705075-028	21-Apr-2017 00:00	GW53_2.50	✓	
EM1705075-029	21-Apr-2017 00:00	GW53_3.00		✓
EM1705075-030	21-Apr-2017 00:00	GW52_1.50	✓	
EM1705075-031	21-Apr-2017 00:00	GW52_2.00	✓	
EM1705075-032	21-Apr-2017 00:00	GW52_2.50	✓	
EM1705075-033	21-Apr-2017 00:00	GW52_3.00		✓
EM1705075-034	21-Apr-2017 00:00	GW52_3.70	✓	
EM1705075-035	21-Apr-2017 00:00	GW52_4.50	✓	

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MULLER		Destination Laboratory	
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0409536240		ALS	
PROJECT NUMBER & TASK COI: 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:				Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORS etc.	
COOLER SEAL (circle appropriate)							
Intact: Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED: Yes No							
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	GW82 - 2.00	S	21/4/17		250ml Jar	1	X
	GW82 - 2.50						
	GW82 - 3.00						
	GW82 - 3.50						
	GW82 - 4.00						
	GW82 - 4.50						
	GW82 - 4.90						
	GW72 - 2.00						
	GW72 - 2.50						
	GW72 - 3.00						
	GW72 - 4.00						
	GW72 - 4.50						
	GW72 - 4.90						
	GW81 - 2.50						
	GW81 - 3.50						
	GW81 - 4.00						
	GW81 - 4.90						
	GW80 - 2.50						
	GW80 - 3.00						
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT	
Name: Jacob Muller		Name:		Name: Bharathi		Con' Note No:	
Date: 24/4/17		Date:		Date: 24/4/17		Transport Co:	
Of: ABLom		Of:		Of: ALS			
Time: 7:30		Time:		Time: 12 p			
<p>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</p> <p>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 Specialion bottle; SP = Sulfuric Preserved Plastic;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.</p> <p style="text-align: right;">Soil Container Codes: Jar = Unpreserved glass jar</p>							

Environmental Division
Melbourne
Work Order Reference
EM1705075



Telephone : + 61-3-8549 9600

ANZ
FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: <u>I. MULLER</u>		Destination Laboratory		
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0409536240</u> PHONE:		<u>ALS</u>		
PROJECT NUMBER & TASK COI <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>				
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)								
Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>								
SAMPLE TEMPERATURE								
CHILLED: Yes <input type="checkbox"/> No <input type="checkbox"/>		CONTAINER INFORMATION						
SAMPLE INFORMATION (note: S = Soil, W=Water)								
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD	
	<u>GW80-3.50</u>	<u>S</u>	<u>21/4/17</u>		<u>250ml Jar</u>	<u>1</u>	<u>X</u>	
	<u>GW80-4.50</u>							
	<u>GW80-4.90</u>							
	<u>GW40-1.50</u>							
	<u>GW40-3.00</u>							
	<u>GW40-4.50</u>							
	<u>GW53-1.50</u>							
	<u>GW53-2.00</u>							
	<u>GW53-2.50</u>							
	<u>GW53-3.00</u>							
	<u>GW52-1.50</u>							
	<u>GW52-2.00</u>							
	<u>GW52-2.50</u>							
	<u>GW52-3.00</u>							
	<u>GW52-3.70</u>							
	<u>GW52-4.50</u>							
	<u>GW47-1.50</u>							
	<u>GW47-1.90</u>							
	<u>GW47-3.00</u>							
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT		
Name: <u>Jacob Muller</u>		Name: <u>Bharathi</u>		Name: <u>ALS</u>		Con' Note No:		
Date: <u>24/4/17</u>		Date:		Date: <u>24/4</u>		Transport Co:		
Of: <u>AECOM</u>		Of:		Of:				
Time: <u>7:30</u>		Time:		Time: <u>12p</u>				

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;
Soil Container Codes: Jar = Unpreserved glass Jar
 F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: PROJECT MANAGER (PM): Averyll Coyne		ADDRESS / OFFICE: SITE: Fishermens Bend		SAMPLER: J. MULLER		Destination Laboratory ALS	
PROJECT NUMBER & TASK COI: 60537182		P.O. NO.:		MOBILE: 0409536240		PHONE:	
RESULTS REQUIRED (Date):		QUOTE NO.:		EMAIL REPORT TO: AVERYLL COYNE			
ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)							
FOR LABORATORY USE ONLY COOLER SEAL (circle appropriate) Intact: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> SAMPLE TEMPERATURE: CHILLED: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:				Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.	
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	GW47-4.50	S	2/4/17		250ml Jar	1	
	QC17				metals 2 purple vials	1+2	
	QC18				Trip blank	1	
	QC19				Trip blank	1	
RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT	
Name: Jacob Muller		Name:		Name: Bharathi		Con' Note No:	
Date: 24/4/17		Date:		Date: 24/4		Transport Co:	
Of: ALS		Of:		Of: ALS			
Time: 7:30		Time:		Time: 12 p			

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
Soil Container Codes: Jar = Unpreserved glass jar

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MULLER		Destination Laboratory		
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0409536240		PHONE:		
PROJECT NUMBER & TASK COI 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE		ALS		
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY:		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)								
Intact: Yes No N/A								
SAMPLE TEMPERATURE								
CHILLED: Yes No								
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION				HOLD X SCANNED
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
	GW82 - 2.00	S	24/4/17		250ml Jar	1		
	GW82 - 2.50							
	GW82 - 3.00							
	GW82 - 3.50							
	GW82 - 4.00							
	GW82 - 4.50							
	GW82 - 4.90							
	GW72 - 2.00							
	GW72 - 2.50							
	GW72 - 3.00							
	GW72 - 4.00							
	GW72 - 4.50							
	GW72 - 4.90							
	GW81 - 2.50							
	GW81 - 3.50							
	GW81 - 4.00							
	GW81 - 4.90							
	GW80 - 2.50							
	GW80 - 3.00							
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT		
Name: Jacob Muller		Name:		Name: Bharathi		Con' Note No:		
Date: 24/4/17		Date:		Date: 24/4/17		Transport Co:		
Of: AECOM		Of:		Of: ALS		Time: 12 p		
Time: 7:30		Time:		Time:				
<p>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</p> <p>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;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.</p> <p style="text-align: right;">Soil Container Codes: Jar = Unpreserved glass jar</p>								

Environmental Division
Melbourne
Work Order Reference
EM1705075



Telephone : + 61-3-8549 9600

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: <u>I. MULLER</u>		Destination Laboratory	
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0409536240</u> PHONE:		<u>ALS</u>	
PROJECT NUMBER & TASK COI <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:				Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.	
COOLER SEAL (circle appropriate)							
Intact: Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED: Yes No							
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	<u>GW80-3.50</u>	<u>S</u>	<u>21/4/17</u>		<u>250ml Jar</u>	<u>1</u>	<u>X</u>
	<u>GW80-4.50</u>						
	<u>GW80-4.90</u>						
	<u>GW40-1.50</u>						
	<u>GW40-3.00</u>						
	<u>GW40-4.50</u>						
	<u>GW53-1.50</u>						
	<u>GW53-2.00</u>						
	<u>GW53-2.50</u>						
	<u>GW53-3.00</u>						
	<u>GW52-1.50</u>						
	<u>GW52-2.00</u>						
	<u>GW52-2.50</u>						
	<u>GW52-3.00</u>						
	<u>GW52-3.70</u>						
	<u>GW52-4.50</u>						
	<u>GW47-1.50</u>						
	<u>GW47-1.90</u>						
	<u>GW47-3.00</u>						
RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT	
Name: <u>Jacob Muller</u>		Name:		Name: <u>Bharatu</u>		Con' Note No:	
Date: <u>25/4/17</u>		Date:		Date: <u>24/4</u>		Transport Co:	
Of: <u>ALS</u>		Of:		Of: <u>ALS</u>			
Time: <u>7:30</u>		Time:		Time: <u>12</u>			
<p>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</p> <p>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;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.</p> <p>Soil Container Codes: Jar = Unpreserved glass jar</p>							

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MULLER		Destination Laboratory ALS		
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0409536240 PHONE:				
PROJECT NUMBER & TASK COI: 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE				
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						HOLD
COOLER SEAL (if applicable)								
Intact: Yes No N/A								
SAMPLE TEMPERATURE								
CHILLED: Yes No		Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.						
SAMPLER INFORMATION (note: S = Soil, W = Water)								CONTAINER INFORMATION
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
	GW47-4.50	S	24/4/17		250ml Jar	1		
	QC17				1 metals 2 purple vials	1+2		
	QC18				Trip blank	1		
	QC19				Trip blank	1		
RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT		
Name: Jacob Muller		Name:		Name: Shanathi		Con' Note No:		
Date: 24/4/17		Date:		Date: 24/4		Transport Co:		
Of: AECOM		Of:		Of: ALS				
Time: 2:30		Time:		Time: 12 p				
<p>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</p> <p>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;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. Soil Container Codes: Jar = Unpreserved glass jar</p>								

ANZ

FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: <u>I. MULLER</u>		Destination Laboratory		
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0409536240</u>		ALS		
PROJECT NUMBER & TASK COI: <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>				
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STOPAGE OR DISPOSAL						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)								
Impact: Yes No N/A								
SAMPLE TEMPERATURE								
Chilled: Yes No								
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
20	GW80-3.50	S	2/4/17		250ml Jar	1		
21	GW80-4.50							
22	GW80-4.90							
23	GW40-1.50							
24	GW40-3.00							
25	GW40-4.50							
26	GW53-1.50							
27	GW53-2.00							
28	GW53-2.50							
29	GW53-3.00							
30	GW52-1.50							
31	GW52-2.00							
32	GW52-2.50							
33	GW52-3.00							
34	GW52-3.50							
35	GW52-4.50							
36	GW47-1.50							
37	GW47-1.90							
38	GW47-3.00							
RELINQUISHED BY:				RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT
Name: <u>Jacob Muller</u>		Date: <u>2/4/17</u>		Name: <u>Bharathi</u>		Date: <u>2/4/17</u>		Con' Note No:
Of: <u>ALS</u>		Time: <u>7:00</u>		Of: <u>ALS</u>		Time: <u>12</u>		Transport Co:

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
 Soil Container Codes: Jar = Unpreserved glass jar

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: J. MILLER		Destination Laboratory	
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0409936240		ALS	
PROJECT NUMBER & TASK COI 60537182		P.O. NO.:		EMAIL REPORT TO: AVERYLL COYNE			
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL				Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.	
COOLER SEAL (circle appropriate)							
Intact Yes No N/A							
SAMPLE TEMPERATURE							
CHILLED Yes No							
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
39	GW47-4.50	S	20/4/17		250ml Jar	1	X
40	QC17				Intact, 2 purple	1+2	X
41	QC18				trip blank	1	X
42	QC19				trip blank	1	X
	EXTRA sample		Am 27/4				
43	GW53-4.5		21/4/17				
RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT	
Name: Jacob Miller		Name:		Name: B. Smith		Con' Note No:	
Date: 24/4/17		Date:		Date: 24/4		Transport Co:	
Of: AECOM		Of:		Of: ALS			
Time: 2:30		Time:		Time: 12 p			
<p>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</p> <p>V = VQA Vial HCl Preserved; VB = VQA Vial Sodium Bisulphate Preserved; VS = VQA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Special on bottle; SP = Sulfuric Preserved Plastic;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.</p> <p>Soil Container Codes: Jar = Unpreserved glass jar</p>							

Peter Ravlic

From: Coyne, Averyll <Averyll.Coyne@aecom.com>
Sent: Wednesday, 26 April 2017 4:30 PM
To: Peter Ravlic
Subject: RE: ON HOLD - EM1705075 - AECOM Project: 60537182
Attachments: SKM_C554e17042616330.pdf

Hi Peter,

Please see attached the updated COC.

Kind Regards
Averyll

Averyll Coyne
Principal Environmental Scientist
D +61 3 9653 8072 M +61 499 252 502
Averyll.Coyne@aecom.com

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From: Peter Ravlic [<mailto:peter.ravlic@alsglobal.com>]
Sent: Monday, 24 April 2017 12:24 PM
To: Coyne, Averyll
Subject: FW: ON HOLD - EM1705075 - AECOM Project: 60537182

Hi Averyll

FYI, the attached samples have been rec'd on hold

Thanks

Regards

Peter Ravlic

Client Services Officer – Springvale
Environmental



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F +61 3 8549 9626
Peter.Ravlic@alsglobal.com
2-4 Westall Rd
Springvale Vic 3171
Australia

CERTIFICATE OF ANALYSIS

Work Order : **EM1705226**
Client : **AECOM Australia Pty Ltd**
Contact : **MS AVERYLL COYNE**
Address : **COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET
MELBOURNE VIC, AUSTRALIA 3000**
Telephone : **+61 03 9653 1234**
Project : **60537182**
Order number : **60537182 / 3.4**
C-O-C number : **----**
Sampler : **TIMOTHY MARTIN**
Site : **Fishermens Bend**
Quote number : **ME/199/16**
No. of samples received : **72**
No. of samples analysed : **15**

Page : 1 of 11
Laboratory : Environmental Division Melbourne
Contact : Carol Walsh
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9608
Date Samples Received : 27-Apr-2017 02:30
Date Analysis Commenced : 01-May-2017
Issue Date : 04-May-2017 16:53



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Andrew Epps	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, 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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EG005T: EM1705226 #28 Poor duplicate precision for cadmium, chromium, copper, nickel and zinc due to sample heterogeneity.
- EG005T: EM1705276 #9 Poor duplicate precision for iron due to sample heterogeneity.
- 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	GW46_3.0B	GW62_2.7A	GW74_4.0A	GW70_2.0A	GW61_2.50
Client sampling date / time			24-Apr-2017 09:30	24-Apr-2017 10:50	24-Apr-2017 13:10	24-Apr-2017 14:30	24-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705226-005	EM1705226-010	EM1705226-018	EM1705226-020	EM1705226-027
				Result	Result	Result	Result	Result
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.05	0.07	0.06	<0.02	4.59



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW61_3.00	GW75_3.00	GW76_3.00	GW77_3.5	GW65_3.5
Client sampling date / time				24-Apr-2017 00:00	24-Apr-2017 00:00	24-Apr-2017 00:00	26-Apr-2017 00:00	26-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705226-028	EM1705226-035	EM1705226-044	EM1705226-057	EM1705226-060	
				Result	Result	Result	Result	Result	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%	17.4	----	----	----	----	----
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	6510	----	----	----	----	----
Iron	7439-89-6	50	mg/kg	209000	----	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	31	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	26	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	283	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	1470	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	4780	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	844	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	4850	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%	----	<0.02	0.08	<0.02	2.46	
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	----	----	----	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	----	----	----	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	----	----	----	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	----	----	----	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	----	----	----	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	----	----	----	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	----	----	----	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	----	----	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	<5	----	----	----	----	----
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	----	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	----	----	----	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	----	----	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	----	----	----	----	----
EP074D: Fumigants									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW61_3.00	GW75_3.00	GW76_3.00	GW77_3.5	GW65_3.5
Client sampling date / time				24-Apr-2017 00:00	24-Apr-2017 00:00	24-Apr-2017 00:00	26-Apr-2017 00:00	26-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705226-028	EM1705226-035	EM1705226-044	EM1705226-057	EM1705226-060	
				Result	Result	Result	Result	Result	
EP074D: Fumigants - Continued									
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	----	----	----	----	
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	----	----	----	----	
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	----	----	----	----	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	----	----	----	----	
Chloromethane	74-87-3	5	mg/kg	<5	----	----	----	----	
Vinyl chloride	75-01-4	5	mg/kg	<5	----	----	----	----	
Bromomethane	74-83-9	5	mg/kg	<5	----	----	----	----	
Chloroethane	75-00-3	5	mg/kg	<5	----	----	----	----	
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	----	----	----	----	
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	----	----	----	----	
Iodomethane	74-88-4	0.5	mg/kg	<0.5	----	----	----	----	
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	----	----	----	----	
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	----	----	----	----	
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	----	----	----	----	
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	----	----	----	----	
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	----	----	----	----	
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	----	----	----	----	
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	----	----	----	----	
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	----	----	----	----	
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	----	----	----	----	
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	----	----	----	----	
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	----	----	----	----	
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	----	----	----	----	
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	----	----	----	----	
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	----	----	----	----	
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	----	----	----	----	
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	----	----	----	----	
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	----	----	----	----	
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW61_3.00	GW75_3.00	GW76_3.00	GW77_3.5	GW65_3.5
Client sampling date / time				24-Apr-2017 00:00	24-Apr-2017 00:00	24-Apr-2017 00:00	26-Apr-2017 00:00	26-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705226-028	EM1705226-035	EM1705226-044	EM1705226-057	EM1705226-060	
				Result	Result	Result	Result	Result	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	----	----	----	----	
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	----	----	----	----	
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	----	----	----	----	
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	----	----	----	----	
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	----	----	----	----	
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	----	----	----	----	
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	----	----	----	----	
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	----	----	----	----	
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	----	----	----	----	
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg	<0.5	----	----	----	----	
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	----	----	----	----	
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	----	----	----	----	
Bromoform	75-25-2	0.5	mg/kg	<0.5	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(b+j)fluoranthene	205-99-2	205-82-3	0.5	mg/kg	<0.5	----	----	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW61_3.00	GW75_3.00	GW76_3.00	GW77_3.5	GW65_3.5
Client sampling date / time				24-Apr-2017 00:00	24-Apr-2017 00:00	24-Apr-2017 00:00	26-Apr-2017 00:00	26-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705226-028	EM1705226-035	EM1705226-044	EM1705226-057	EM1705226-060	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----	
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----	
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----	
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----	
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----	
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	75.9	----	----	----	----	
Toluene-D8	2037-26-5	0.5	%	64.2	----	----	----	----	
4-Bromofluorobenzene	460-00-4	0.5	%	82.2	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	84.2	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	97.5	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	83.7	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GW61_3.00	GW75_3.00	GW76_3.00	GW77_3.5	GW65_3.5
Client sampling date / time				24-Apr-2017 00:00	24-Apr-2017 00:00	24-Apr-2017 00:00	26-Apr-2017 00:00	26-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EM1705226-028	EM1705226-035	EM1705226-044	EM1705226-057	EM1705226-060	
				Result	Result	Result	Result	Result	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	102	----	----	----	----	
Anthracene-d10	1719-06-8	0.5	%	115	----	----	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	103	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	72.7	----	----	----	----	
Toluene-D8	2037-26-5	0.2	%	60.4	----	----	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	94.5	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	GW73_3.5	----	----	----	----
			Client sampling date / time	26-Apr-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1705226-068	-----	-----	-----	-----
				Result	----	----	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.05	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC20	QC21	QC22	QC23	----
Client sampling date / time				24-Apr-2017 00:00	24-Apr-2017 00:00	24-Apr-2017 00:00	27-Apr-2017 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1705226-049	EM1705226-050	EM1705226-051	EM1705226-052	-----	-----
				Result	Result	Result	Result	----	----
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	----
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	----
EP080: BTEXN									
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	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	92.9	89.5	91.5	91.4	91.4	----
Toluene-D8	2037-26-5	2	%	83.6	83.8	85.8	83.6	83.6	----
4-Bromofluorobenzene	460-00-4	2	%	99.3	98.7	100	101	101	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	62	122
Toluene-D8	2037-26-5	64	120
4-Bromofluorobenzene	460-00-4	66	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124
Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
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	: EM1705226	Page	: 1 of 13
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 27-Apr-2017
Order number	: 60537182 / 3.4	Date Analysis Commenced	: 01-May-2017
C-O-C number	: ----	Issue Date	: 04-May-2017
Sampler	: TIMOTHY MARTIN		
Site	: Fishermens Bend		
Quote number	: ME/199/16		
No. of samples received	: 72		
No. of samples analysed	: 15		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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>
Andrew Epps	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, 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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 862637)									
EM1705200-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	10.7	11.0	2.14	0% - 50%
EM1705298-006	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	26.1	22.4	15.1	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 862249)									
EM1705226-028	GW61_3.00	EG005T: Cadmium	7440-43-9	1	mg/kg	26	# 14	62.2	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	283	# 349	20.8	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	844	# 1450	52.7	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	31	31	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	1470	1380	6.27	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	4780	5790	19.2	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	4850	# 2800	53.6	0% - 20%
		EG005T: Aluminium	7429-90-5	50	mg/kg	6510	5910	9.55	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	209000	232000	10.3	0% - 20%
EM1705276-009	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	7	10	34.7	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	17	21	23.2	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	41	40	0.00	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	6770	6270	7.69	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	10900	# 21400	65.2	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 862250)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 862250) - continued									
EM1705226-028	GW61_3.00	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1705276-009	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 866523)									
EB1708297-001	Anonymous	EP003: Total Organic Carbon	----	0.02	%	0.58	0.57	0.00	0% - 20%
EM1705226-068	GW73_3.5	EP003: Total Organic Carbon	----	0.02	%	0.05	0.06	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 862163)									
EM1705226-028	GW61_3.00	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 862163)									
EM1705226-028	GW61_3.00	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 862163)									
EM1705226-028	GW61_3.00	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074D: Fumigants (QC Lot: 862163)									
EM1705226-028	GW61_3.00	EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 862163)									
EM1705226-028	GW61_3.00	EP074: 1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				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: 862163) - continued									
EM1705226-028	GW61_3.00	EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit
EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit		
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 862163)									
EM1705226-028	GW61_3.00	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 862163)									
EM1705226-028	GW61_3.00	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 862620)									
EM1705226-028	GW61_3.00	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 862620) - continued									
EM1705226-028	GW61_3.00	EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 862164)									
EM1705226-028	GW61_3.00	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 862621)									
EM1705226-028	GW61_3.00	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 862164)									
EM1705226-028	GW61_3.00	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 862621)									
EM1705226-028	GW61_3.00	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 862164)									
EM1705226-028	GW61_3.00	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
Sub-Matrix: WATER									
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: 863785)									
EM1704909-002	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



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: 863785) - continued									
EM1704909-002	Anonymous	EG020A-T: Copper	7440-50-8	0.001	mg/L	0.003	0.002	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.10	0.09	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.11	0.10	11.5	No Limit
EM1705312-007	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
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.02	0.02	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 862091)									
EM1705226-049	QC20	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1705294-006	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 860333)									
EM1705226-049	QC20	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1705285-007	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	90	100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 860333)									
EM1705226-049	QC20	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1705285-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 860333)									
EM1705226-049	QC20	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
EM1705285-007	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

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Work Order : EM1705226
Client : AECOM Australia Pty Ltd
Project : 60537182



Sub-Matrix: **WATER**

				<i>Laboratory Duplicate (DUP) Report</i>					
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Recovery Limits (%)</i>
EP080: BTEXN (QC Lot: 860333) - continued									
EM1705285-007	Anonymous	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: **SOIL**

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	
EG005T: Total Metals by ICP-AES (QCLot: 862249)									
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	6134 mg/kg	111	93	115	
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	84.6	79	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.9	85	109	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	96.0	89	113	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.5	84	116	
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	105	95	109	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	89.8	85	107	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	94.7	89	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	93	109	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	92.6	89	111	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 862250)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.3	85	103	
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 866523)									
EP003: Total Organic Carbon	----	0.02	%	<0.02	100 %	101	70	130	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 862163)									
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	83.1	77	118	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	84.0	77	116	
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	73.5	68	111	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	78.5	71	111	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	88.5	69	113	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	92.6	72	108	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	86.5	73	111	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	85.2	70	115	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	69.8	60	110	
EP074B: Oxygenated Compounds (QCLot: 862163)									
EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	10 mg/kg	93.4	63	128	
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	85.6	68	142	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	10 mg/kg	96.9	67	123	
EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	10 mg/kg	88.7	62	128	
EP074C: Sulfonated Compounds (QCLot: 862163)									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	66.1	50	128	
EP074D: Fumigants (QCLot: 862163)									
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	78.9	65	115	



Sub-Matrix: SOIL

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
EP074D: Fumigants (QCLot: 862163) - continued								
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	86.6	78	116
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	69.1	64	104
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	69.1	61	103
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	84.3	73	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 862163)								
EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	10 mg/kg	86.8	45	123
EP074: Chloromethane	74-87-3	5	mg/kg	<5	10 mg/kg	100	55	133
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	82.3	58	138
EP074: Bromomethane	74-83-9	5	mg/kg	<5	10 mg/kg	79.7	43	133
EP074: Chloroethane	75-00-3	5	mg/kg	<5	10 mg/kg	98.7	66	126
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	10 mg/kg	89.0	64	122
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	80.1	68	120
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	87.2	47	116
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	83.3	70	118
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	82.9	75	118
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	83.1	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	79.1	68	110
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	79.5	70	116
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	75.1	62	111
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	83.9	69	116
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	87.8	77	119
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	83.0	74	114
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	88.4	80	120
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	89.3	78	120
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	82.3	73	121
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	70.6	65	109
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	79.6	56	114
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	75.1	40	114
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	90.6	76	124
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	93.1	75	123
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	69.4	45	123
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	67.2	54	106
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	87.8	60	118
EP074F: Halogenated Aromatic Compounds (QCLot: 862163)								
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	86.9	82	117
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	80.9	75	113
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	80.2	74	113
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	79.5	72	112
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	102	75	115



Sub-Matrix: SOIL

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
EP074F: Halogenated Aromatic Compounds (QCLot: 862163) - continued									
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	104	77	120	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	89.0	81	115	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	86.5	64	118	
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	89.5	76	120	
EP074G: Trihalomethanes (QCLot: 862163)									
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	82.6	77	123	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	73.1	65	107	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	68.2	61	105	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	66.9	54	104	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 862620)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	115	80	121	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	87.7	70	130	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	120	80	120	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	108	70	124	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	106	80	122	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	106	80	126	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	108	70	128	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	110	80	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	95.8	70	130	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	110	80	126	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	84.7	70	124	
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	107	75	125	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	95.6	65	125	
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	106	65	128	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	110	65	126	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	106	65	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 862164)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	94.4	70	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 862621)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	734 mg/kg	98.1	65	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3091 mg/kg	107	70	126	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1507 mg/kg	107	70	122	
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 862164)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	98.9	68	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 862621)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1101 mg/kg	102	68	130	



Sub-Matrix: **SOIL**

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	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 862621) - continued									
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3914 mg/kg	105	72	116	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	283 mg/kg	101	38	132	
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080: BTEXN (QCLot: 862164)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	93.0	74	124	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	99.4	77	125	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	97.5	73	125	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	103	77	128	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	103	81	128	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	92.3	66	130	

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	
EG020T: Total Metals by ICP-MS (QCLot: 863785)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	104	100	110	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	107	94	113	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.5	88	110	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	99.2	87	112	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	102	87	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	88	113	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	104	91	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	100	86	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	103	88	112	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	99	110	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 862091)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	98.6	87	113	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 860333)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	81.8	67	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 860333)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	81.2	65	125	
EP080: BTEXN (QCLot: 860333)									
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	86.8	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	91.4	72	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	87.8	72	130	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	89.1	78	128	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
EP080: BTEXN (QCLot: 860333) - continued								
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	89.5	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: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low High	
EG005T: Total Metals by ICP-AES (QCLot: 862249)							
EM1705276-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	85.0	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.4	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	104	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	99.7	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	92.9	76	124
		EG005T: Nickel	7440-02-0	50 mg/kg	95.4	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	95.4	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	98.9	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 862250)							
EM1705276-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	106	76	116
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 862620)							
EM1705298-014	Anonymous	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	104	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	109	52	148
EP080/071: Total Petroleum Hydrocarbons (QCLot: 862621)							
EM1705298-012	Anonymous	EP071: C10 - C14 Fraction	----	734 mg/kg	95.5	53	123
		EP071: C15 - C28 Fraction	----	3091 mg/kg	100	70	124
		EP071: C29 - C36 Fraction	----	1507 mg/kg	101	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 862621)							
EM1705298-012	Anonymous	EP071: >C10 - C16 Fraction	----	1101 mg/kg	97.4	65	123
		EP071: >C16 - C34 Fraction	----	3914 mg/kg	98.8	67	121
		EP071: >C34 - C40 Fraction	----	283 mg/kg	104	44	126

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low High	
EG020T: Total Metals by ICP-MS (QCLot: 863785)							
EM1704909-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	104	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	96.6	75	129



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EG020T: Total Metals by ICP-MS (QCLot: 863785) - continued							
EM1704909-002	Anonymous	EG020A-T: Chromium	7440-47-3	1 mg/L	96.8	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	92.2	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	94.1	83	121
		EG020A-T: Nickel	7440-02-0	1 mg/L	101	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	101	74	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 862091)							
EM1705244-007	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	86.1	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 860333)							
EM1705226-050	QC21	EP080: C6 - C9 Fraction	----	280 µg/L	79.8	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 860333)							
EM1705226-050	QC21	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	77.9	44	122
EP080: BTEXN (QCLot: 860333)							
EM1705226-050	QC21	EP080: Benzene	71-43-2	20 µg/L	92.5	68	130
		EP080: Toluene	108-88-3	20 µg/L	89.4	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1705226	Page	: 1 of 8
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Telephone	: +61-3-8549 9608
Project	: 60537182	Date Samples Received	: 27-Apr-2017
Site	: Fishermens Bend	Issue Date	: 04-May-2017
Sampler	: TIMOTHY MARTIN	No. of samples received	: 72
Order number	: 60537182 / 3.4	No. of samples analysed	: 15

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

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

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: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EM1705226--028	GW61_3.00	Cadmium	7440-43-9	62.2 %	0% - 20%	RPD exceeds LOR based limits
EG005T: Total Metals by ICP-AES	EM1705226--028	GW61_3.00	Chromium	7440-47-3	20.8 %	0% - 20%	RPD exceeds LOR based limits
EG005T: Total Metals by ICP-AES	EM1705276--009	Anonymous	Iron	7439-89-6	65.2 %	0% - 20%	RPD exceeds LOR based limits
EG005T: Total Metals by ICP-AES	EM1705226--028	GW61_3.00	Nickel	7440-02-0	52.7 %	0% - 20%	RPD exceeds LOR based limits
EG005T: Total Metals by ICP-AES	EM1705226--028	GW61_3.00	Zinc	7440-66-6	53.6 %	0% - 20%	RPD exceeds LOR based limits

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
TRH Volatiles/BTEX	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	0	1	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: **SOIL**

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

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103) GW61_3.00	24-Apr-2017	----	----	----	01-May-2017	08-May-2017	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) GW61_3.00	24-Apr-2017	01-May-2017	21-Oct-2017	✓	02-May-2017	21-Oct-2017	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) GW61_3.00	24-Apr-2017	01-May-2017	22-May-2017	✓	01-May-2017	22-May-2017	✓



Matrix: SOIL

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	
EP003: Total Organic Carbon (TOC) in Soil								
Pulp Bag (EP003) GW46_3.0B, GW74_4.0A, GW61_2.50, GW76_3.00	GW62_2.7A, GW70_2.0A, GW75_3.00,	24-Apr-2017	03-May-2017	22-May-2017	✓	03-May-2017	22-May-2017	✓
Pulp Bag (EP003) GW77_3.5, GW73_3.5	GW65_3.5,	26-Apr-2017	03-May-2017	24-May-2017	✓	03-May-2017	24-May-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074) GW61_3.00		24-Apr-2017	01-May-2017	01-May-2017	✓	01-May-2017	01-May-2017	✓
EP074B: Oxygenated Compounds								
Soil Glass Jar - Unpreserved (EP074) GW61_3.00		24-Apr-2017	01-May-2017	01-May-2017	✓	01-May-2017	01-May-2017	✓
EP074C: Sulfonated Compounds								
Soil Glass Jar - Unpreserved (EP074) GW61_3.00		24-Apr-2017	01-May-2017	01-May-2017	✓	01-May-2017	01-May-2017	✓
EP074D: Fumigants								
Soil Glass Jar - Unpreserved (EP074) GW61_3.00		24-Apr-2017	01-May-2017	01-May-2017	✓	01-May-2017	01-May-2017	✓
EP074E: Halogenated Aliphatic Compounds								
Soil Glass Jar - Unpreserved (EP074) GW61_3.00		24-Apr-2017	01-May-2017	01-May-2017	✓	01-May-2017	01-May-2017	✓
EP074F: Halogenated Aromatic Compounds								
Soil Glass Jar - Unpreserved (EP074) GW61_3.00		24-Apr-2017	01-May-2017	01-May-2017	✓	01-May-2017	01-May-2017	✓
EP074G: Trihalomethanes								
Soil Glass Jar - Unpreserved (EP074) GW61_3.00		24-Apr-2017	01-May-2017	01-May-2017	✓	01-May-2017	01-May-2017	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) GW61_3.00		24-Apr-2017	01-May-2017	08-May-2017	✓	02-May-2017	10-Jun-2017	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080) GW61_3.00		24-Apr-2017	01-May-2017	08-May-2017	✓	01-May-2017	08-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080) GW61_3.00		24-Apr-2017	01-May-2017	08-May-2017	✓	01-May-2017	08-May-2017	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) GW61_3.00		24-Apr-2017	01-May-2017	08-May-2017	✓	01-May-2017	08-May-2017	✓



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
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) QC20	24-Apr-2017	02-May-2017	21-Oct-2017	✓	02-May-2017	21-Oct-2017	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) QC20	24-Apr-2017	----	----	----	01-May-2017	22-May-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) QC20, QC22	24-Apr-2017	01-May-2017	08-May-2017	✓	01-May-2017	08-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC23	27-Apr-2017	01-May-2017	11-May-2017	✓	01-May-2017	11-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) QC20, QC22	24-Apr-2017	01-May-2017	08-May-2017	✓	01-May-2017	08-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC23	27-Apr-2017	01-May-2017	11-May-2017	✓	01-May-2017	11-May-2017	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC20, QC22	24-Apr-2017	01-May-2017	08-May-2017	✓	01-May-2017	08-May-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC23	27-Apr-2017	01-May-2017	11-May-2017	✓	01-May-2017	11-May-2017	✓



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: **SOIL**

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	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	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-AES	EG005T	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	2	13	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	1	100.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	1	100.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	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-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	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-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	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-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	0	1	0.00	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	
Laboratory Duplicates (DUP)							



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP) - Continued							
Total Mercury by FIMS	EG035T	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	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
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	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. Mercury in solids are determined following an appropriate acid digestion. 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 Organic Carbon	EP003	SOIL	In house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red detector.
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds	EP074	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
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.
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)
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)



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Dry and Pulverise (up to 100g)	GEO30	SOIL	#
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
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)
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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1705226

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS AVERYLL COYNE	Contact	: Carol Walsh
Address	: COLLINS SQUARE LEVEL 10, TOWER TWO 727 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: averyll.coyne@aecom.com	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60537182	Page	: 1 of 4
Order number	: 60537182 / 3.4	Quote number	: EM2016AECOMAU0012 (ME/199/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Fishermens Bend		
Sampler	: TIMOTHY MARTIN		

Dates

Date Samples Received	: 27-Apr-2017 02:30	Issue Date	: 28-Apr-2017
Client Requested Due Date	: 05-May-2017	Scheduled Reporting Date	: 05-May-2017

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 3	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 72 / 15

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale & ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP003 Total Organic Carbon (TOC) in Soil	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-10 TRHVOC/PAH
EM1705226-001	24-Apr-2017 09:30	GW46_2.0	✓					
EM1705226-002	24-Apr-2017 09:30	GW46_2.2	✓					
EM1705226-003	24-Apr-2017 09:30	GW46_2.7	✓					
EM1705226-004	24-Apr-2017 09:30	GW46_3.0A	✓					
EM1705226-005	24-Apr-2017 09:30	GW46_3.0B				✓		
EM1705226-006	24-Apr-2017 09:30	GW46_4.0A	✓					
EM1705226-007	24-Apr-2017 09:30	GW46_4.0B	✓					
EM1705226-008	24-Apr-2017 10:50	GW62_2.0A	✓					
EM1705226-009	24-Apr-2017 10:50	GW62_2.0B	✓					
EM1705226-010	24-Apr-2017 10:50	GW62_2.7A				✓		
EM1705226-011	24-Apr-2017 10:50	GW62_2.7B	✓					
EM1705226-012	24-Apr-2017 10:50	GW62_4.0A	✓					
EM1705226-013	24-Apr-2017 10:50	GW62_4.0B	✓					
EM1705226-014	24-Apr-2017 13:10	GW74_1.5-1.8	✓					
EM1705226-015	24-Apr-2017 13:10	GW74_1.8-2.0	✓					
EM1705226-016	24-Apr-2017 13:10	GW74_3.0A	✓					
EM1705226-017	24-Apr-2017 13:10	GW74_3.0B	✓					
EM1705226-018	24-Apr-2017 13:10	GW74_4.0A				✓		
EM1705226-019	24-Apr-2017 13:10	GW74_4.0B	✓					
EM1705226-020	24-Apr-2017 14:30	GW70_2.0A				✓		
EM1705226-021	24-Apr-2017 14:30	GW70_2.0B	✓					
EM1705226-022	24-Apr-2017 14:30	GW70_3.0A	✓					
EM1705226-023	24-Apr-2017 14:30	GW70_3.0B	✓					
EM1705226-024	24-Apr-2017 14:30	GW70_4.0A	✓					
EM1705226-025	24-Apr-2017 14:30	GW70_4.0B	✓					
EM1705226-026	24-Apr-2017 00:00	GW61_2.00	✓					
EM1705226-027	24-Apr-2017 00:00	GW61_2.50				✓		
EM1705226-028	24-Apr-2017 00:00	GW61_3.00		✓	✓		✓	✓
EM1705226-029	24-Apr-2017 00:00	GW61_4.50	✓					
EM1705226-030	24-Apr-2017 00:00	GW61_4.60	✓					
EM1705226-031	24-Apr-2017 00:00	GW61_5.00	✓					
EM1705226-032	24-Apr-2017 00:00	GW75_2.00	✓					
EM1705226-033	24-Apr-2017 00:00	GW75_2.10	✓					
EM1705226-034	24-Apr-2017 00:00	GW75_2.2	✓					
EM1705226-035	24-Apr-2017 00:00	GW75_3.00				✓		

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: <u>AECOM AUSTRALIA PTY LTD.</u>		ADDRESS / OFFICE: <u>Level 10/727 Collins St Dock St</u>		SAMPLER: <u>Tim MARTIN</u>		Destination Laboratory	
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>042288549</u>		PHONE: <u>-</u>	
PROJECT NUMBER & TASK COI: <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO:		<p>ALC</p> <p>Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.</p>	
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
<p>FOR LABORATORY USE ONLY</p> COOLER SEAL (circle appropriate) Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> SAMPLE TEMPERATURE CHILLED: Yes <input type="checkbox"/> No <input type="checkbox"/>		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:					
SAMPLE INFORMATION (note: S = Soil, W=Water)		CONTAINER INFORMATION					
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	<u>GW46-2.0</u>	<u>S</u>	<u>24/4/17</u>	<u>0930</u>	<u>ice/unpreserved</u>	<u>1 Jar</u>	<input checked="" type="checkbox"/>
	<u>GW46-2.2</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW46-2.7</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW46-3.0A</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW46-3.0B</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW46-4.0A</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW46-4.0B</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW62-2.0A</u>	<u>S</u>		<u>1050</u>			<input checked="" type="checkbox"/>
	<u>GW62-2.0B</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW62-2.7A</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW62-2.7B</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW62-4.0A</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW62-4.0B</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW74-1.5-1.8</u>	<u>S</u>		<u>1250</u>			<input checked="" type="checkbox"/>
	<u>GW74-1.8-2.0</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW74-3.0A</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW74-3.0B</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW74-4.0A</u>	<u>S</u>					<input checked="" type="checkbox"/>
	<u>GW74-4.0B</u>	<u>S</u>					<input checked="" type="checkbox"/>
RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT:	
Name:		Name:		Name: <u>Karen</u>		Con' Note No:	
Date:		Date:		Date: <u>27/4</u>		Transport Co:	
Of:		Of:		Of: <u>AN</u>		Time: <u>12:00</u>	
Time:		Time:		Time:		Time:	

Environmental Division
 Melbourne
 Work Order Reference
EM1705226



Telephone : + 61-3-8549 9600

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
Soil Container Codes: Jar = Unpreserved glass jar

COC Page of

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: <u>AECOM</u>		ADDRESS / OFFICE:		SAMPLER: <u>Jim Martin</u>		Destination Laboratory		
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0422188549</u>		PHONE: <u>-</u>		
PROJECT NUMBER & TASK COI <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>Averyll Coyne</u>		<u>ALS</u>		
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)								
INTACT: Yes No N/A								
SAMPLE TEMPERATURE								
CHILLED: Yes No								
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD	
	<u>GW70-2.0A</u>	<u>S</u>	<u>24/4/17</u>	<u>1430</u>	<u>ice/unpreserved</u>	<u>1x Jar</u>	✓	
	<u>GW70-2.0B</u>	<u>S</u>					✓	
	<u>GW70-3.0A</u>	<u>S</u>					✓	
	<u>GW70-3.0B</u>	<u>S</u>					✓	
	<u>GW70-4.0A</u>	<u>S</u>					✓	
	<u>GW70-4.0B</u>	<u>S</u>	↓	↓	↓		✓	
	<u>GW61-2.00</u>							
	<u>GW61-2.50</u>							
	<u>GW61-3.00</u>							
	<u>GW61-4.50</u>							
	<u>GW61-4.60</u>							
	<u>GW61-5.00</u>							
	<u>GW75-2.00</u>							
	<u>GW75-2.10</u>							
	<u>GW75-2.26</u>							
	<u>GW75-3.00</u>							
	<u>GW75-3.40</u>							
	<u>GW75-3.50</u>							
	<u>GW75-4.00</u>		↓	↓	↓			
RELINQUISHED BY:			RECEIVED BY			RECEIVED BY		METHOD OF SHIPMENT
Name: <u>DB 2714</u>		Date:	Name:		Date:	Name: <u>Karrin Au</u>		Date: <u>27/4</u>
Of:		Time:	Of:		Time:	Of: <u>Au</u>		Time: <u>14:20</u>
								Con' Note No:
								Transport Co:

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. Soil Container Codes: Jar = Unpreserved glass Jar

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:			ADDRESS / OFFICE:			SAMPLER: <u>J. MULLER</u>			Destination Laboratory ACS						
PROJECT MANAGER (PM): <u>Averyll Coyne</u>			SITE: <u>Fishermens Bend</u>			MOBILE: <u>0409536240</u> PHONE:									
PROJECT NUMBER & TASK COI: <u>60537182</u>			P.O. NO.:			EMAIL REPORT TO: <u>AVERYLL COYNE</u>									
RESULTS REQUIRED (Date):			QUOTE NO.:			ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)									
FOR LABORATORY USE ONLY			COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:									Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.			
COOLER SEAL (circle appropriate)															
Intact: Yes No N/A															
SAMPLE TEMPERATURE															
CHILLED: Yes No			SAMPLE INFORMATION (note: S = Soil, W = Water)			CONTAINER INFORMATION									
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles								HOLD	
	<u>GW75-4.50</u>	<u>S</u>	<u>24/4/17</u>		<u>250ml Jar</u>	<u>1</u>									<u>X</u>
	<u>GW75-5.00</u>														
	<u>GW76-2.00</u>														
	<u>GW76-2.10</u>														
	<u>GW76-2.50</u>														
	<u>GW76-3.00</u>														
	<u>GW76-3.50</u>														
	<u>GW76-4.00</u>														
	<u>GW76-4.50</u>														
	<u>GW76-4.90</u>														
	<u>QC20</u>	<u>W</u>	<u>24/4/17</u>		<u>2 purple vial (+) wet</u>										<u>X</u>
	<u>QC21</u>	<u>W</u>	<u>24/4</u>												
	<u>QC22</u>	<u>W</u>	<u>24/4</u>												
	<u>QC23</u>	<u>W</u>	<u>27/4</u>												
RELINQUISHED BY:			RECEIVED BY			RECEIVED BY			METHOD OF SHIPMENT						
Name: <u>[Signature]</u>			Name:			Name: <u>[Signature]</u>			Con' Note No:						
Date:			Date:			Date: <u>27/4</u>			Transport Co:						
Of:			Of:			Of: <u>[Signature]</u>			Time: <u>14-20</u>						
<p>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</p> <p>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;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.</p> <p style="text-align: right;">Soil Container Codes: Jar = Unpreserved glass jar</p>															

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER:		Destination Laboratory			
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE:				PHONE:	
PROJECT NUMBER & TASK COI 80537182		P.O. NO.:		EMAIL REPORT TO:					
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.	
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:							
COOLER SEAL (circle appropriate)									
Intact: Yes No N/A									
SAMPLE TEMPERATURE									
CHILLED: Yes No									
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION					
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD		
	GW77-0.5	S	26/4/17			15	X		
	GW77-1.0	S					X		
	GW77-1.5	S					X		
	GW77-2.5	S					X		
	GW77-3.5	S					X		
	GW77-4.5	S					X		
	GW85-1.6	S					X		
	GW85-3.5	S					X		
	GW85-4.4	S					X		
	GW85-5.0	S					X		
	GW73-0.2	S					X		
	GW73-0.5	S					X		
	GW73-1.0	S					X		
	GW73-1.5	S					X		
	GW73-2.5	S					X		
	GW73-3.5	S					X		
	GW73-8.5	S					X		
RELINQUISHED BY:			RECEIVED BY:			RECEIVED BY:		METHOD OF SHIPMENT	
Name: <i>YSC</i>		Date: <i>27/4</i>		Name: <i>[Signature]</i>		Date: <i>27/4</i>		Con' Note No: Transport Co:	
Of: <i>27/4</i>		Time:		Of: <i>[Signature]</i>		Time: <i>16:20</i>			
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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.									
Soil Container Codes: Jar = Unpreserved glass jar									

COC Page of

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: AECOM AUSTRALIA PTY LTD.		ADDRESS / OFFICE: Level 10/727 Collins St South		SAMPLER: Tim MARTIN		Destination Laboratory			
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0422188549		ALS			
PROJECT NUMBER & TASK CODE: 60537182		P.O. NO.:		PHONE: -					
RESULTS REQUIRED (Date):		QUOTE NO.:		EMAIL REPORT TO:					
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:							
COOLER SEAL (circle appropriate)								Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.	
Intact: Yes No N/A									
SAMPLE TEMPERATURE									
CHILLED: Yes No									
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION					
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD		
1	GW46-2.0	S	24/4/17	0930	ice/unpreserved	1 Jar	✓		
2	GW46-2.2	S					✓		
3	GW46-2.7	S					✓		
4	GW46-3.0A	S					✓		
5	GW46-3.0B	S					✓		
6	GW46-4.0A	S					✓		
7	GW46-4.0B	S					✓		
8	GW62-2.0A	S		1050			✓		
9	GW62-2.0B	S					✓		
10	GW62-2.7A	S					✓		
11	GW62-2.7B	S					✓		
12	GW62-4.0A	S					✓		
13	GW62-4.0B	S					✓		
14	GW74-1.5-1.8	S		1250			✓		
15	GW74-1.8-2.0	S					✓		
16	GW74-3.0A	S					✓		
17	GW74-3.0B	S					✓		
18	GW74-4.0A	S					✓		
19	GW74-4.0B	S					✓		
RELINQUISHED BY:			RECEIVED BY			RECEIVED BY		METHOD OF SHIPMENT	
Name:		Date:		Name:		Date:		Con' Note No:	
Of:		Time:		Of:		Time:		Transport Co:	
<p>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</p> <p>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;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. Soil Container Codes: Jar = Unpreserved glass jar</p>									

Environmental Division
 Melbourne
 Work Order Reference
EM1705226



Telephone : + 61-3-8549 9600

70, 74, 73, 71

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: AECOM		ADDRESS / OFFICE:		SAMPLER: Jim MacGrim		Destination Laboratory				
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermens Bend		MOBILE: 0422885919		ALS				
PROJECT NUMBER & TASK COI: 60537182		P.O. NO.:		PHONE: -						
RESULTS REQUIRED (Date):		QUOTE NO.:		EMAIL REPORT TO: Averyll COYNE		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.		
COOL SEAL (circle appropriate)										
Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>										
SAMPLE TEMPERATURE										
CHILLED: Yes <input type="checkbox"/> No <input type="checkbox"/>		SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles			HOLD	
20	GW70-2.0A	S	24/4/17	1430	ice/unpreserved	1x Jar			✓	
21	GW70-2.0B	S	↓	↓	↓	↓			✓	
22	GW70-3.0A	S	↓	↓	↓	↓			✓	
23	GW70-3.0B	S	↓	↓	↓	↓			✓	
24	GW70-4.0A	S	↓	↓	↓	↓			✓	
25	GW70-4.0B	S	↓	↓	↓	↓			✓	
26	GW61-2.00		↓	↓	↓	↓				
27	GW61-2.50		↓	↓	↓	↓				
28	GW61-3.00		↓	↓	↓	↓				
29	GW61-4.50		↓	↓	↓	↓				
30	GW61-4.60		↓	↓	↓	↓				
31	GW61-5.00		↓	↓	↓	↓				
32	GW75-2.00		↓	↓	↓	↓				
33	GW75-2.10		↓	↓	↓	↓				
34	GW75-2.20		↓	↓	↓	↓				
35	GW75-3.00		↓	↓	↓	↓				
36	GW75-3.40		↓	↓	↓	↓				
37	GW75-3.50		↓	↓	↓	↓				
38	GW75-4.00		↓	↓	↓	↓				
RELINQUISHED BY:			RECEIVED BY:			RECEIVED BY:			METHOD OF SHIPMENT	
Name: DB 2714		Date:		Name:		Date: 28/4		Con' Note No:		
Of:		Time:		Of:		Time: 14:20		Transport Co:		
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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.										

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER: <u>J. MULLER</u>		Destination Laboratory		
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0409 536240</u> PHONE:		<u>ACS</u>		
PROJECT NUMBER & TASK COI <u>60537182</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>				
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)								
Intact: Yes No N/A								
SAMPLE TEMPERATURE								
CHILLED: Yes No								
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD	
39	GW75-4.50	S	24/4/17		250ml Jar	1	X	
40	GW75-5.00							
41	GW76-2.00							
42	GW76-2.10							
43	GW76-2.50							
44	GW76-3.00							
45	GW76-3.50							
46	GW76-4.00							
47	GW76-4.50							
48	GW76-4.90							
49	QC20	W	24/4/17		2 purple vial (+) wet		X	
50	QC21	W	24/4					
51	QC22	W	24/4					
52	QC23	W	27/4					
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT		
Name: <u>[Signature]</u>	Date:	Name:	Date:	Name: <u>Korn</u>	Date: <u>27/4</u>	Con' Note No:		
Of:	Time:	Of:	Time:	Of: <u>[Signature]</u>	Time: <u>14:20</u>	Transport Co:		
<p>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</p> <p>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;</p> <p>F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.</p> <p>Soil Container Codes: Jar = Unpreserved glass jar</p>								

Rinsate
TRIP BLANK
TRIP BLANK
TRIP BLANK

ANZ
FQM - Generic Chain of Custody Form

CONSULTANT:		ADDRESS / OFFICE:		SAMPLER:		Destination Laboratory		
PROJECT MANAGER (PM): Averyll Coyne		SITE: Fishermans Bend		MOBILE:		PHONE:		
PROJECT NUMBER & TASK COI 60537182		P.O. NO.:		EMAIL REPORT TO:				
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)								
Intact: Yes No N/A								
SAMPLE TEMPERATURE								
CHILLED: Yes No		SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION		
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD	
53	GW77-0.5	S	26/4/17			15	Y	
54	GW77-1.0	S					X	
55	GW77-1.5	S					X	
56	GW77-2.5	S					X	
57	GW77-3.5	S					X	
58	GW77-4.5	S					X	
59	GW65-1.6	S					X	
60	GW65-3.5	S					X	
61	GW65-4.4	S					X	
62	GW65-5.0	S					X	
63	GW73-0.2	S					X	
64	GW73-0.5	S					X	
65	GW73-1.0	S					X	
66	GW73-1.5	S					X	
67	GW73-2.5	S					X	
68	GW73-3.5	S					X	
69	GW73-4.5	S					X	
RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT		
Name: AS 27/4		Name:		Name: AS		Date: 27/4		
Date: 27/4		Date:		Date:		Con' Note No:		
Of:		Of:		Of:		Time: 16:20		
Time:		Time:		Time:		Transport Co:		

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. Soil Container Codes: Jar = Unpreserved glass jar

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CLIENT/TANT: <u>HEINE AUSTRALIA PTY LTD</u>		ADDRESS/OFFICE: <u>10/707 Collins St Melbourne</u>		SAMPLER: <u>Tom Martin</u>		Destination Laboratory <u>ALS</u>		
PROJECT MANAGER (PM): <u>Averyll Coyne</u>		SITE: <u>Fishermans Bend</u>		MOBILE: <u>0122088049</u>				PHONE: <u>-</u>
PROJECT NUMBER & TASK CODE: <u>60537182 / 34</u>		P.O. NO.:		EMAIL REPORT TO:				
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
COOLER SEAL (circle appropriate)								
Intact Yes No N/A								
SAMPLE TEMPERATURE								
CHILLED: Yes No								
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION				
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total Litrres		
1	GW46-2.0	S	28/4/17	0930	100/Unpreserved Jar	1 Jar		
2	GW46-2.2	S						
3	GW46-2.2	S						
4	GW46-2.0A	S						
5	GW46-3.0A	S						
6	GW46-3.0A	S						
7	GW46-4.0B	S						
8	GW62-2.0B	S		1050				
9	GW62-2.0B	S						
10	GW62-2.7B	S						
11	GW62-2.7B	S						
12	GW62-4.0B	S						
13	GW62-4.0B	S						
14	GW74-1.0-1.8	S		1270				
15	GW74-1.8-2.0	S						
16	GW74-3.0A	S						
17	GW74-3.0B	S						
18	GW74-4.0A	S						
19	GW74-4.0B	S						
RELINQUISHED BY:			RECEIVED BY:			RECEIVED BY:		
Name:	Date:	Name:	Date:	Name:	Date:	METHOD OF SHIPMENT		
Of:	Time:	Of:	Time:	Of: <u>Power</u>	Date: <u>27/4</u>	Con' Note No:		
				Of: <u>AN</u>	Time: <u>10:30</u>	Transport Co:		

10:30
4/17

ANZ
FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: <u>AECOM</u>		ADDRESS / OFFICE:		SAMPLER: <u>Tim Merten</u>		Destination Laboratory	
PROJECT MANAGER (PM) <u>Averyll Coyne</u>		SITE: <u>Fishermens Bend</u>		MOBILE: <u>0422 86549</u>		PHONE: <u>-</u>	
PROJECT NUMBER & TASK CODE <u>60537182 / 3 4</u>		P.O. NO.:		EMAIL REPORT TO: <u>AVERYLL COYNE</u>		ALS	
RESULTS REQUIRED (Date):		QUOTE NO.:		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL				Notes: e.g. Highly contaminated sample	
COOLER SEAL (circle appropriate)						e.g. "High PAHs expected".	
Intact: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A						Extra volume for QC or trace LORs etc.	
SAMPLE TEMPERATURE							
CHILLED: Yes <input type="checkbox"/> No <input type="checkbox"/>							
SAMPLE INFORMATION (note: S = Soil, W = Water)				CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
20	GW70-2.0A	S	24/4/17	1430	ice/unpreserved	1x Jar	X
21	GW70-2.0B	S					X
22	GW70-3.0A	S					X
23	GW70-3.0B	S					X
24	GW70-4.0A	S					X
25	GW70-4.0B	S					X
26	GW61-2.00						X
27	GW61-2.50						X
28	GW61-3.00						X
29	GW61-4.50						X
30	GW61-4.60						X
31	GW61-5.00						X
32	GW75-2.00						X
33	GW75-2.10						X
34	GW75-2.20						X
35	GW75-3.00						X
36	GW75-3.40						X
37	GW75-3.50						X
38	GW75-4.00						X

metals: As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg

RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT	
Name: <u>[Signature]</u>	Date: <u>27/4</u>	Name: <u>[Signature]</u>	Date: <u>27/4</u>	Name: <u>[Signature]</u>	Date: <u>27/4</u>	Con' Note No:	
Of: <u>[Signature]</u>	Time: <u>14:30</u>	Of: <u>[Signature]</u>	Time: <u>14:30</u>	Of: <u>[Signature]</u>	Time: <u>14:30</u>	Transport Co.:	

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

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT:			ADDRESS / OFFICE:			SAMPLER: <u>MULLER</u>			Destination Laboratory				
PROJECT MANAGER (PM): <u>Averyll Coyne</u>			SITE: <u>Fishermans Bend</u>			MOBILE: <u>0409536240</u> PHONE:			<u>ASS</u>				
PROJECT NUMBER & TASK COI <u>60537182</u> <u>134</u>			P.O. NO.:			EMAIL REPORT TO: <u>AVEYLL COYNE</u>							
RESULTS REQUIRED (Date):			QUOTE NO.:			ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)							
FOR LABORATORY USE ONLY			COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QG or trace LORs etc.				
COOLER SEAL (circle appropriate)													
Intact: Yes No N/A													
SAMPLE TEMPERATURE													
CHILLED: Yes No													
SAMPLE INFORMATION (note: S = Soil, W = Water)						CONTAINER INFORMATION							
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	TOC	MOLD	TRH (C.G.)	TRH (C.G.)	BIEX	METALS	
39	GW75 - 2.70	S	24/4/17		250ml br	1		X					metals: As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Se, Hg
40	GW75 - 3.00							X					
41	GW76 - 2.00							X					
42	GW76 - 2.10							X					
43	GW76 - 2.50							X					
44	GW76 - 2.00						X						
45	GW76 - 3.70							X					
46	GW76 - 4.00							X					
47	GW76 - 4.50							X					
48	GW76 - 4.90							X					
49	QC20	W	24/4/17		2 sample / 1 quart				X	X	X		Rinse TRIP BLANK TRIP BLANK TRIP BLANK
50	QC21	W	24/4						X				
51	QC22	W	24/4						X				
52	QC23	W	24/4						X				
RELINQUISHED BY:			RECEIVED BY:			RECEIVED BY:			METHOD OF SHIPMENT				
Name: <u>[Signature]</u> Date: <u>27/4</u>			Name: <u>[Signature]</u> Date: <u>27/4</u>			Name: <u>[Signature]</u> Date: <u>27/4</u>			Con' Note No:				
Of: <u>[Signature]</u> Time: <u>14:20</u>			Of: <u>[Signature]</u> Time: <u>14:20</u>			Of: <u>[Signature]</u> Time: <u>14:20</u>			Transport Co:				

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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
 Soil Container Codes: Jar = Unpreserved glass jar

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: PROJECT MANAGER (PM) Averyll Coyne				ADDRESS / OFFICE: SITE: Fishermens Bend				SAMPLER: MOBILE: _____ PHONE: _____				Destination Laboratory
PROJECT NUMBER & TASK CODE: 60537182 / 15 +				P.O. NO.:				EMAIL REPORT TO:				
RESULTS REQUIRED (Date):				QUOTE NO.:				ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)				
FOR LABORATORY USE ONLY COOLER SEAL (circle appropriate) Intact: Yes No N/A				COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL				Notes: e.g. Highly contaminated sample e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.				TOC GWA
SAMPLE TEMPERATURE CHILLED: Yes No												
SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION								
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles						
53	GW77-0.5	S	26/4/17			1J		X				
54	GW77-1.0	S						X				
55	GW77-1.5	S						X				
56	GW77-2.5	S						X				
57	GW77-3.5	S						X				
58	GW77-4.5	S						X				
59	GW65-1.6	S						X				
60	GW65-3.5	S						X				
61	GW65-4.4	S						X				
62	GW65-5.0	S						X				
63	GW73-0.2	S						X				
64	GW73-0.5	S						X				
65	GW73-1.0	S						X				
66	GW73-1.5	S						X				
67	GW73-2.5	S						X				
68	GW77-3.5	S						X				
69	GW73-4.5	S						X				
70	GW61-4.00	S	24/4/17		1x250ml Soil jar							
71	GW61-4.70	S	"		"							
RELINQUISHED BY Name: _____ Date: 27/4 Of: _____ Time: _____				RECEIVED BY Name: _____ Date: _____ Of: _____ Time: _____				RECEIVED BY Name: _____ Date: 27/4 Of: _____ Time: 16:20				METHOD OF SHIPMENT Con' Note No: Transport Co.:
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 Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag Soil Container Codes: Jar = Unpreserved glass jar												

Extra Samples:

72 GW65-4.6 S 26/4/17 1x250ml Soil jar



Appendix K

Data Validation

Data Validation

The Quality Assurance and Quality Control (QA/QC) processes implemented by AECOM during baseline groundwater assessment 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 (2017) outlined the scope of works to be completed for this assessment. The SAQP (2017) also outlined the procedures for groundwater bore gauging and sampling, and field quality control sampling and analysis. The groundwater sampling event in this assessment was performed in accordance with the SAQP.

Appendix K 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 K 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 K**, 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.

DATA VALIDATION REPORT					
Project number:	60537182	Validation by:	Natalie Cooper	Date:	8/06/2017
Client:	EPA Victoria				
Site:	Fishermans Bend				
Matrix type:	Soil	Data verified by:	Natalie Cooper	Date:	8/06/2017
Primary samples:	39				
Laboratory:	ALS (Secondary Eurofins)				
Lab reference:	EM1704834, EM1705075, EM1704980, EM1704939, EM1705226, EM1704753, EM1704573, EM1704688, 543256	Project Manager:	Averyll Coyne		
Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication to decision-making on the project.				
Chain of Custody (COC)	Chain of custody documents completed by Dugald Cunningham.				
Analysis Request	Laboratory analysis request and sample receipt notification reviewed and approved by Averyll Coyne / Dugald Cunningham.				
Field Blank	N/A				
Rinsate Blank	Rinsate blank samples were collected at a frequency of one per day of sampling (nine in total) with the exception of 26 April 2017 where no rinsate was collected. Concentrations reported below the LOR for all analytes tested with the exception of samples QC01, QC02 and QC10 for Aluminium (0.04, 0.03, 0.02 mg/L respectively), samples QC_06 and QC10 for copper (0.002, 0.003 mg/L respectively), QC02 for Iron (0.05 mg/L) and QC01, QC02 and QC_06 for Zinc (0.008, 0.014 and 0.02 mg/L respectively).				
Trip Blank	Trip blanks were included at a frequency of one per cooler (thirteen in total). Concentrations were not detected above the LOR for all analytes tested.				
Frequency of field QC	Field duplicate and triplicates (inter-laboratory duplicates) were collected at a frequency of one in twenty primary samples (one of each in total).				
Handling and preservation	<p>Primary, duplicate and triplicate groundwater samples were received preserved and chilled at the laboratory. Sample receipt temperature was within the recommended range ($\leq 6^{\circ}\text{C}$) in primary batches:</p> <ul style="list-style-type: none"> • EM1704573 – 2.5°C, ice present • EM1704688 – 3.6°C, ice present • EM1704753 – 3.5°C, ice present • EM1704834 – 4.7°C, ice present • EM1704939 – 2.1°C, ice present • EM1704980 – 1.1°C, ice present • EM1705075 – 5.8°C, ice present • EM1705226 – 5.8°C, ice present • 543256 – 3.7°C, attempt to chill evident <p>All samples were received at the laboratory in appropriate sample containers.</p>				
Laboratory QA/QC					
Tests requested/reported	Samples were analysed and reported as requested on the Chain Of Custody (COC).				
Holding time compliance	Samples were extracted and analysed within recommended holding times.				

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Laboratory Accreditation	The laboratory analysis was conducted by ALS Environmental Pty Ltd (Melbourne) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate sample was analysed at Eurofins MGT (Melbourne), also a NATA accredited laboratory.				
Frequency of laboratory QC	The laboratory reported a sufficient frequency of quality control samples to assess whether the results have been reported to an acceptable accuracy and precision with the exception of Matrix Spikes for TRH Volatiles/BTEX and Volatile Organic Compounds (expected frequency 5%, actual 0%) on workorder EM1705226.				
Method Blank	Method blank concentrations were not detected above the LOR for all analytes tested.				
Laboratory duplicate RPDs	Laboratory duplicate Relative Percentage Differences (RPD) were within control limits with the exception of the following: <ul style="list-style-type: none"> • EM1705226, sample GW61_3.00 for Cadmium – RPD 62.2%, Chromium – RPD 20.8%, Nickel – RPD 52.7% and Zinc – RPD 53.6%, RPD exceeds LOR based limits of 0% - 20% The laboratory duplicate RPDs are presented in the laboratory Quality Control Report.				
Laboratory control spike recovery	Laboratory Control Spikes (LCS) recoveries were within control limits.				
Matrix spike recovery	All AECOM Matrix Spike (MS) recoveries (where reported) were within control limits.				
Surrogate spike recovery	Surrogate spike recoveries were within control limits.				
QA/QC Data Evaluation					
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted.				
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.				
Limits of reporting	Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted guideline criteria.				
Field duplicate RPDs	Field duplicate RPDs were reported within control limits.				
Field triplicate RPDs	Field triplicate RPDs were reported within control limits with the exception of QC16 (GW43_4.00) for Iron, with an RPD of 35.29%.				

Table K2: QA/QC Register

Sample	Date Sampled	Parent Sample ID (AECOM ID)	QA/QC Sample Type	Matrix	Laboratory	Collected By	Contaminant of Interest
QC01	10/04/2017		Rinsate	water	ALS		Metals, BTEX, TRH
QC02	11/04/2017		Rinsate	water	ALS		Metals, BTEX, TRH
QC_06	12/04/2017		Rinsate	water	ALS		Metals, BTEX, TRH
QC08	13/04/2017		Rinsate	water	ALS		Metals, BTEX, TRH
QC10	18/04/2017		Rinsate	water	ALS		Metals, BTEX, TRH
QC12	19/04/2017		Rinsate	water	ALS		Metals, BTEX, TRH
QC19	20/04/2017		Rinsate	water	ALS		Metals, BTEX, TRH
QC17	21/04/2017		Rinsate	water	ALS		Metals, BTEX, TRH
QC20	24/04/2017		Rinsate	water	ALS		Metals, BTEX, TRH
QC05	12/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC_07	12/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC09	13/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC11	18/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC13	19/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC14	19/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC17	20/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC18	20/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC18	21/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC19	21/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC21	24/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC22	24/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC23	27/04/2017		Trip Blank	water	ALS		BTEX, TRH
QC15	20/04/2017	GW43_4.00	Duplicate	soil	ALS		TRH, TPH, MAH, PAH, Metals, Halogenated Aromatic Compounds, Halogenated Aliphatic Compounds, Oxygenated Compounds, Sulfonated Compounds, Inorganics
QC16	20/04/2017	GW43_4.00	Triplicate	soil	Eurofins		TRH, TPH, MAH, PAH, Metals, Halogenated Aromatic Compounds, Halogenated Aliphatic Compounds, Oxygenated Compounds, Sulfonated Compounds, Inorganics

Notes: TPH - total petroleum hydrocarbon; TDS - total dissolved solid; BTEXN - benzene, toluene, ethylbenzene, xylene, naphthalene

Table K3: Field Blanks

MATRIX TYPE		Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
WATER		Field ID	QC01	QC02	QC_06	QC08	QC10	QC12	QC19	QC17	QC20	QC05	QC_07	QC09	QC11	QC13	QC14	QC17	QC18	QC18	QC19	QC21	QC22	QC23
Analyte	Units	EQL	10/04/2017	11/04/2017	12/04/2017	13/04/2017	18/04/2017	19/04/2017	20/04/2017	21/04/2017	24/04/2017	12/04/2017	12/04/2017	13/04/2017	18/04/2017	19/04/2017	19/04/2017	20/04/2017	20/04/2017	21/04/2017	21/04/2017	24/04/2017	24/04/2017	27/04/2017
Aluminium	mg/L	0.01	0.04	0.03	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/L	0.001	<0.001	<0.001	0.002	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron	mg/L	0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/L	0.005	0.008	0.014	0.02	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
m&p-Xylene	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
o-Xylene	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total BTEX	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene (VOC)	µg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
C6-C9 fraction	µg/L	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
C6-C10 fraction	µg/L	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
C6-C10 fraction (minus BTEX)(F1)	µg/L	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20

Notes: TRH - total recoverable hydrocarbon; BTEX - benzene, toluene, ethylbenzene, xylene

MATRIX TYPE	Field ID	Parent Sample ID	Duplicate Sample ID	RPD	Parent Sample ID	Triplicate Sample ID	RPD				
								GW43_4.00	QC15	GW43_4.00	QC16
								Date Sampled	20/04/2017	20/04/2017	20/04/2017
Analyte	Units	LOR									
C6-C9 fraction	mg/kg	10 : 20 (Interlab)	<10	<10	0	<10	<20				
C10-C14 fraction	mg/kg	50 : 20 (Interlab)	<50	<50	0	<50	<20				
C15-C28 fraction	mg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50				
C29-C36 fraction	mg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50				
C10-C36 fraction (sum)	mg/kg	50	<50	<50	0	<50	<50				
C6-C10 fraction	mg/kg	10 : 20 (Interlab)	<10	<10	0	<10	<20				
C6-C10 fraction (minus BTEX)(F1)	mg/kg	10 : 20 (Interlab)	<10	<10	0	<10	<20				
>C10-C16 fraction	mg/kg	50	<50	<50	0	<50	<50				
>C10-C16 (minus Naphthalene)(F2)	mg/kg	50	<50	<50	0	<50	<50				
>C16-C34 fraction	mg/kg	100	<100	<100	0	<100	<100				
>C34-C40 fraction	mg/kg	100	<100	<100	0	<100	<100				
>C10-C40 fraction (sum)	mg/kg	50	<50	<50	0	<50	<50				
Benzene	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	0	<0.2	<0.1				
Toluene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1				
Ethylbenzene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1				
m&p-Xylene	mg/kg	0.5 : 0.2 (Interlab)	<0.5	<0.5	0	<0.5	<0.2				
o-Xylene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1				
Total Xylenes	mg/kg	0.5 : 0.3 (Interlab)	<0.5	<0.5	0	<0.5	<0.3				
Styrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Isopropylbenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
n-butylbenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5					
n-propylbenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5					
p-isopropyltoluene	mg/kg	0.5	<0.5	<0.5	0	<0.5					
sec-butylbenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5					
tert-butylbenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5					
1,2,4-trimethylbenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,3,5-trimethylbenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Total BTEX	mg/kg	0.2	<0.2	<0.2	0	<0.2					
Naphthalene (VOC)	mg/kg	1 : 0.5 (Interlab)	<1	<1	0	<1	<0.5				
Naphthalene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Benzo(b&j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Benzo(a)pyrene TEQ (zero)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Benzo(a)pyrene TEQ (half LOR)	mg/kg	0.5	0.6	0.6	0	0.6	0.6				
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	1.2	1.2	0	1.2	1.2				
Chrysene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Indeno(1,2,3-cd)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Sum of PAHs	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Aluminium	mg/kg	50 : 10 (Interlab)	490	500	2	490	630				
Arsenic	mg/kg	5 : 2 (Interlab)	<5	<5	0	<5	<2				
Cadmium	mg/kg	1 : 0.4 (Interlab)	<1	<1	0	<1	<0.4				
Chromium	mg/kg	2 : 5 (Interlab)	2	2	0	2	<5				
Copper	mg/kg	5	<5	<5	0	<5					
Iron	mg/kg	50 : 20 (Interlab)	840	870	4	840	1200				
Lead	mg/kg	5	<5	<5	0	<5	<5				
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1				
Nickel	mg/kg	2 : 5 (Interlab)	<2	<2	0	<2	<5				
Selenium	mg/kg	5 : 2 (Interlab)	<5	<5	0	<5	<2				
Zinc	mg/kg	5	<5	<5	0	<5	<5				
Bromobenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Chlorobenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
2-Chlorotoluene	mg/kg	0.5	<0.5	<0.5	0	<0.5					
4-Chlorotoluene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,2-Dichlorobenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,3-Dichlorobenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,4-Dichlorobenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,2,3-Trichlorobenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5					
1,2,4-Trichlorobenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5					
Dichlorodifluoromethane (Freon 12)	mg/kg	5 : 0.5 (Interlab)	<5	<5	0	<5	<0.5				
Chloromethane	mg/kg	5 : 0.5 (Interlab)	<5	<5	0	<5	<0.5				
Vinyl chloride	mg/kg	5 : 0.5 (Interlab)	<5	<5	0	<5	<0.5				
Bromomethane	mg/kg	5 : 0.5 (Interlab)	<5	<5	0	<5	<0.5				
Chloroethane	mg/kg	5 : 0.5 (Interlab)	<5	<5	0	<5	<0.5				
Trichlorofluoromethane (Freon 11)	mg/kg	5 : 0.5 (Interlab)	<5	<5	0	<5	<0.5				
1,1-Dichloroethene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Iodomethane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,1-Dichloroethane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
cis-1,2-Dichloroethane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
trans-1,2-Dichloroethane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,1,1-Trichloroethane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,1-Dichloropropene	mg/kg	0.5	<0.5	<0.5	0	<0.5					
Carbon Tetrachloride	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,2-Dichloroethane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Trichloroethene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Dibromomethane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,1,2-Trichloroethane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,3-Dichloropropane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Tetrachloroethene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,1,1,2-Tetrachloroethane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
trans-1,4-Dichloro-2-butene	mg/kg	0.5	<0.5	<0.5	0	<0.5					
cis-1,4-Dichloro-2-butene	mg/kg	0.5	<0.5	<0.5	0	<0.5					
1,1,2,2-Tetrachloroethane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,2,3-Trichloropropane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Pentachloroethane	mg/kg	0.5	<0.5	<0.5	0	<0.5					
1,2-Dibromo-3-chloropropane	mg/kg	0.5	<0.5	<0.5	0	<0.5					
Hexachlorobutadiene	mg/kg	0.5	<0.5	<0.5	0	<0.5					
1,2-Dibromoethane (EDB)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
1,2-Dichloropropane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
2,2-Dichloropropane	mg/kg	0.5	<0.5	<0.5	0	<0.5					
cis-1,3-Dichloropropene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
trans-1,3-Dichloropropene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Bromodichloromethane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Bromoform	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Chloroform	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Dibromochloromethane	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
Moisture Content	%	1	19.7	19.8	1	19.7	19				
Vinyl acetate	mg/kg	5	<5	<5	0	<5					
2-Butanone (MEK)	mg/kg	5 : 0.5 (Interlab)	<5	<5	0	<5	<0.5				
2-hexanone (MBK)	mg/kg	5	<5	<5	0	<5					
4-Methyl-2-pentanone (MIBK)	mg/kg	5 : 0.5 (Interlab)	<5	<5	0	<5	<0.5				
Carbon disulfide	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5				
pH (CaCl2)	pH Units	0.1	7.9	7.9	0	7.9					

Notes:
 RPDs have only been considered where a concentration is greater than 10 times the EQL
 High RPDs are in bold

DATA VALIDATION REPORT					
Project number:	60537182	Validation by:	Natalie Cooper	Date:	8/06/2017
Client:	EPA Victoria				
Site:	Fishermans Bend				
Matrix type:	Water	Data verified by:	Natalie Cooper	Date:	8/06/2017
Primary samples:	41				
Laboratory:	ALS (Secondary Eurofins)				
Lab reference:	EM1705809, EM1705994, EM1706071, EM1706246, 546047, 546117	Project Manager:	Averyll Coyne		
Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication to decision-making on the project.				
Field Quality Assurance and Quality Control					
Chain of Custody (COC)	Chain of custody documents completed by Navjot Kaur.				
Analysis Request	Laboratory analysis request and sample receipt notification reviewed and approved by Averyll Coyne / Navjot Kaur.				
Field Blank	Field blank samples were collected at a frequency of one per day of sampling with the exception of 8 to 10 May 2017 (four in total). Concentrations were reported below the limit of reporting (LOR) for all analytes tested.				
Rinsate Blank	Rinsate blank samples were collected at a frequency of one per day of sampling (six in total). Concentrations reported below the LOR for all analytes tested.				
Trip Blank	Trip blanks were included at frequency of one per cooler (ten in total). Concentrations were not detected above the LOR for all analytes tested.				
Frequency of field QC	Field duplicate and triplicates (inter-laboratory duplicates) were collected at a frequency of one in twenty primary samples (two of each in total).				
Handling and preservation	<p>Primary, duplicate and triplicate groundwater samples were received preserved and chilled at the laboratory. Sample receipt temperature was within the recommended range ($\leq 6^{\circ}\text{C}$) in primary batches:</p> <ul style="list-style-type: none"> • EM1705809 – 1.7°C, ice present • EM1705994 – 1.7°C, ice present • EM1706071 – 3.7°C, ice present • EM1706246 – 5.5°C, ice present • 546047 – 4.5°C, attempt to chill evident • 546117 – 3.6°C, attempt to chill evident <p>All samples were received at the laboratory in appropriate sample containers.</p>				
Laboratory QA/QC					
Tests requested/reported	Samples were analysed and reported as requested on the Chain Of Custody (COC).				
Holding time compliance	Samples were extracted and analysed within recommended holding times.				
Laboratory Accreditation	The laboratory analysis was conducted by ALS Environmental Pty Ltd (Melbourne) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate sample was analysed at Eurofins MGT (Melbourne), also a NATA accredited laboratory.				

DATA VALIDATION REPORT					
Project number:	60537182	Validation by:	Natalie Cooper	Date:	8/06/2017
Client:	EPA Victoria				
Site:	Fishermans Bend				
Matrix type:	Water	Data verified by:	Natalie Cooper	Date:	8/06/2017
Primary samples:	41				
Laboratory:	ALS (Secondary Eurofins)				
Lab reference:	EM1705809, EM1705994, EM1706071, EM1706246, 546047, 546117	Project Manager:	Averyll Coyne		
Frequency of laboratory QC	<p>The laboratory reported a sufficient frequency of quality control samples to assess whether the results have been reported to an acceptable accuracy and precision with the exception of the following:</p> <ul style="list-style-type: none"> • EM170509 – Laboratory Duplicates for TRH – Semivolatile Fraction (expected frequency 10%, actual 8.33%) • EM1705994 – Laboratory Duplicates for PAH/Phenols and TRH – Semivolatile Fraction (expected frequency 10%, actual 0%) and Matrix Spikes for PAH/Phenols and TRH – Semivolatile Fraction (expected frequency 5%, actual 0%) • EM1706071 – Laboratory Duplicates for Fluoride by PC Titrator, PAH/Phenols and TRH – Semivolatile Fraction (expected frequency 10%, actual 9.09%, 0% and 0% respectively) and Matrix Spikes for PAH/Phenols and TRH – Semivolatile Fractions (expected frequency 5%, actual 0%) • EM1706246 – Laboratory Duplicates for PAH/Phenols and TRH Semivolatile Fraction (expected frequency 10%, actual 0% and 5% respectively) and Matrix Spikes for PAH/Phenols and TRH – Semivolatile Fraction (expected frequency 5%, actual 0%) 				
Method Blank	Method blank concentrations were not detected above the LOR for all analytes tested.				
Laboratory duplicate RPDs	Laboratory duplicate Relative Percentage Differences (RPD) were within control limits. The laboratory duplicate RPDs are presented in the laboratory Quality Control Report.				
Laboratory control spike recovery	Laboratory Control Spikes (LCS) recoveries were within control limits.				
Matrix spike recovery	<p>All AECOM Matrix Spike (MS) recoveries (where reported) were within control limits with the exception of:</p> <ul style="list-style-type: none"> • EM1705809 – GW_8/5/17 for Sulfate as SO₄ – Turbidimetric – MS recovery not determined, background level greater than or equal to 4x spike level • EM1705994 – GW77_10/5/17 for Sulfate as SO₄ – MS recovery not determined, background level greater than or equal to 4x spike level • EM1706074 – GW_120517 for Nitrite + Nitrate as N – MS recovery not determined, background level greater than or equal to 4x spike level • EM1706246 – GW46_160517 for Sulfate as SO₄ – Turbidimetric – MS recovery not determined, background level greater than or equal to 4x spike level, GW50_160517 for Ammonia as N and Nitrite + Nitrate as N – MS recovery not determined, background level greater than or equal to 4x spike level 				
Surrogate spike recovery	Surrogate spike recoveries were within control limits.				
QA/QC Data Evaluation					

DATA VALIDATION REPORT					
Project number:	60537182	Validation by:	Natalie Cooper	Date:	8/06/2017
Client:	EPA Victoria				
Site:	Fishermans Bend				
Matrix type:	Water	Data verified by:	Natalie Cooper	Date:	8/06/2017
Primary samples:	41				
Laboratory:	ALS (Secondary Eurofins)				
Lab reference:	EM1705809, EM1705994, EM1706071, EM1706246, 546047, 546117	Project Manager:	Averyll Coyne		
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted.				
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.				
Limits of reporting	Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted guideline criteria.				
Field duplicate RPDs	Field duplicate RPDs were reported within control limits with the exception of: <ul style="list-style-type: none"> • QC101_11/5/17 (GW48_11/5/17) for Ionic Balance (RPD 48.86%) • QC106_120517 (GW52_120517) for Styrene (RPD 40%) and Ionic Balance (RPD %) 				
Field triplicate RPDs	Field triplicate RPDs were reported within control limits with the exception of: <ul style="list-style-type: none"> • QC102_11/05/17 (GW48_11/5/17) for Total Dissolved Solids (RPD 76.75%), Styrene (RPD 66.67%), Nitrate (as N) (RPD 33.33%) and Nitrite (as N) (RPD 100%) • QC107_120517 (GW52_120517) for 1,1-Dichloroethane (RPD 40%), cis-1,2-Dichloroethene (RPD 42.42%), Potassium (RPD 41.21%) 				

Table K2: QA/QC Register

Sample	Date Sampled	Parent Sample ID (AECOM ID)	QA/QC Sample Type	Matrix	Laboratory	Collected By	Contaminant of Interest
QC104_11/5/17	11/05/2017		Field Blank	WATER	ALS	AB	Metals, BTEXN, TPH, TRH
QC110_120517	12/05/2017		Field Blank	WATER	ALS		Metals, BTEXN, TPH, TRH
QC16_160517	16/05/2017		Field Blank	WATER	ALS		Metals, BTEXN, TPH, TRH
QC117_170517	16/05/2017		Field Blank	WATER	ALS		Metals, BTEXN, TPH, TRH
QC103_11/5/17	11/05/2017		Rinsate	WATER	ALS		Metals, BTEXN, TPH, TRH
QC109_120517	12/05/2017		Rinsate	WATER	ALS		Metals, BTEXN, TPH, TRH
QC113_160517	16/05/2017		Rinsate	WATER	ALS		Metals, BTEXN, TPH, TRH
QC115_160517	16/05/2017		Rinsate	WATER	ALS		Metals, BTEXN, TPH, TRH
QC17_160517	16/05/2017		Rinsate	WATER	ALS		Metals, BTEXN, TPH, TRH
QC118_170517	16/05/2017		Rinsate	WATER	ALS		Metals, BTEXN, TPH, TRH
QC105_11/5/17	11/05/2017		Trip Blank	WATER	ALS		BTEXN, TRH
QC13	11/05/2017		Trip Blank	WATER	ALS		BTEXN, TRH
QC14	11/05/2017		Trip Blank	WATER	ALS		BTEXN, TRH
QC15	11/05/2017		Trip Blank	WATER	ALS		BTEXN, TRH
QC12	11/05/2017		Trip Blank	WATER	ALS		BTEXN, TRH
QC108_120517	12/05/2017		Trip Blank	WATER	ALS		BTEXN, TRH
QC111_120517	12/05/2017		Trip Blank	WATER	ALS		BTEXN, TRH
QC112_160517	16/05/2017		Trip Blank	WATER	ALS	AB	BTEXN, TRH
QC114_160517	16/05/2017		Trip Blank	WATER	ALS	AB	BTEXN, TRH
QC116_160517	16/05/2017		Trip Blank	WATER	ALS	AB	BTEXN, TRH
QC101_11/5/17	11/05/2017	GW48_11/5/17	Duplicate	WATER	ALS	AB	MAH, PAH, Metals, Halogenated Aromatic Compounds, Halogenated Aliphatic Compounds, Fumigants, Trihalomethanes, Alkalinity, Nutrients, Major Ions, Oxygenated Compounds, Sulfonated Compounds, Organic Matter, Total Oxidised Sulfur as SO4 2, TPH, TRH
QC106_120517	12/05/2017	GW52_120517	Duplicate	WATER	ALS	AB	MAH, PAH, Metals, Halogenated Aromatic Compounds, Halogenated Aliphatic Compounds, Fumigants, Trihalomethanes, Alkalinity, Nutrients, Major Ions, Oxygenated Compounds, Sulfonated Compounds, Organic Matter, Total Oxidised Sulfur as SO4 2, TPH, TRH
QC102_11/05/17	11/05/2017	GW48_11/5/17	Triplicate	WATER	Eurofins	AB	MAH, PAH, Metals, Halogenated Aromatic Compounds, Halogenated Aliphatic Compounds, Fumigants, Trihalomethanes, Alkalinity, Nutrients, Major Ions, Oxygenated Compounds, Sulfonated Compounds, Organic Matter, Total Oxidised Sulfur as SO4 2, TPH, TRH
QC107_120517	12/05/2017	GW52_120517	Triplicate	WATER	Eurofins	AB	MAH, PAH, Metals, Halogenated Aromatic Compounds, Halogenated Aliphatic Compounds, Fumigants, Trihalomethanes, Alkalinity, Nutrients, Major Ions, Oxygenated Compounds, Sulfonated Compounds, Organic Matter, Total Oxidised Sulfur as SO4 2, TPH, TRH

Notes: TPH - total petroleum hydrocarbon; TDS - total dissolved solid; BTEXN - benzene, toluene, ethylbenzene, xylene, naphthalene

Table K3: Field Blanks

MATRIX TYPE		Sample Type	Field Blank	Field Blank	Field Blank	Field Blank	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	
WATER		Field ID	QC104_11/5/17	QC110_120517	QC16_160517	QC117_170517	QC103_11/5/17	QC109_120517	QC113_160517	QC115_160517	QC17_160517	QC118_170517	QC105_11/5/17	QC13	QC14	QC15	QC12	QC108_120517	QC111_120517	QC112_160517	QC114_160517	QC116_160517	
		Date Sampled	11/05/2017	12/05/2017	16/05/2017	16/05/2017	11/05/2017	12/05/2017	16/05/2017	16/05/2017	16/05/2017	16/05/2017	11/05/2017	11/05/2017	11/05/2017	11/05/2017	12/05/2017	12/05/2017	16/05/2017	16/05/2017	16/05/2017	16/05/2017	
Analyte	Units	EQL																					
Aluminium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-
Iron	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-
Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-
Manganese	mg/L	0.001	-	-	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-
Benzene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	µg/L	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	µg/L	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
m&p-Xylene	µg/L	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
o-Xylene	µg/L	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total BTEX	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene (VOC)	µg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
C6-C9 fraction	µg/L	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
C10-C14 fraction	µg/L	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	-	-	-	-	-	-	-	-	-	-	-
C15-C28 fraction	µg/L	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
C29-C36 fraction	µg/L	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	-	-	-	-	-	-	-	-	-	-	-
C10-C36 fraction (sum)	µg/L	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	-	-	-	-	-	-	-	-	-	-	-
C6-C10 fraction	µg/L	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
C6-C10 fraction (minus BTEX)(F1)	µg/L	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
>C10-C16 fraction	µg/L	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
>C10-C16 (minus Naphthalene)(F2)	µg/L	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
>C16-C34 fraction	µg/L	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
>C34-C40 fraction	µg/L	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
>C10-C40 fraction (sum)	µg/L	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-

Notes: TRH - total recoverable hydrocarbon; BTEX - benzene, toluene, ethylbenzene, xylene

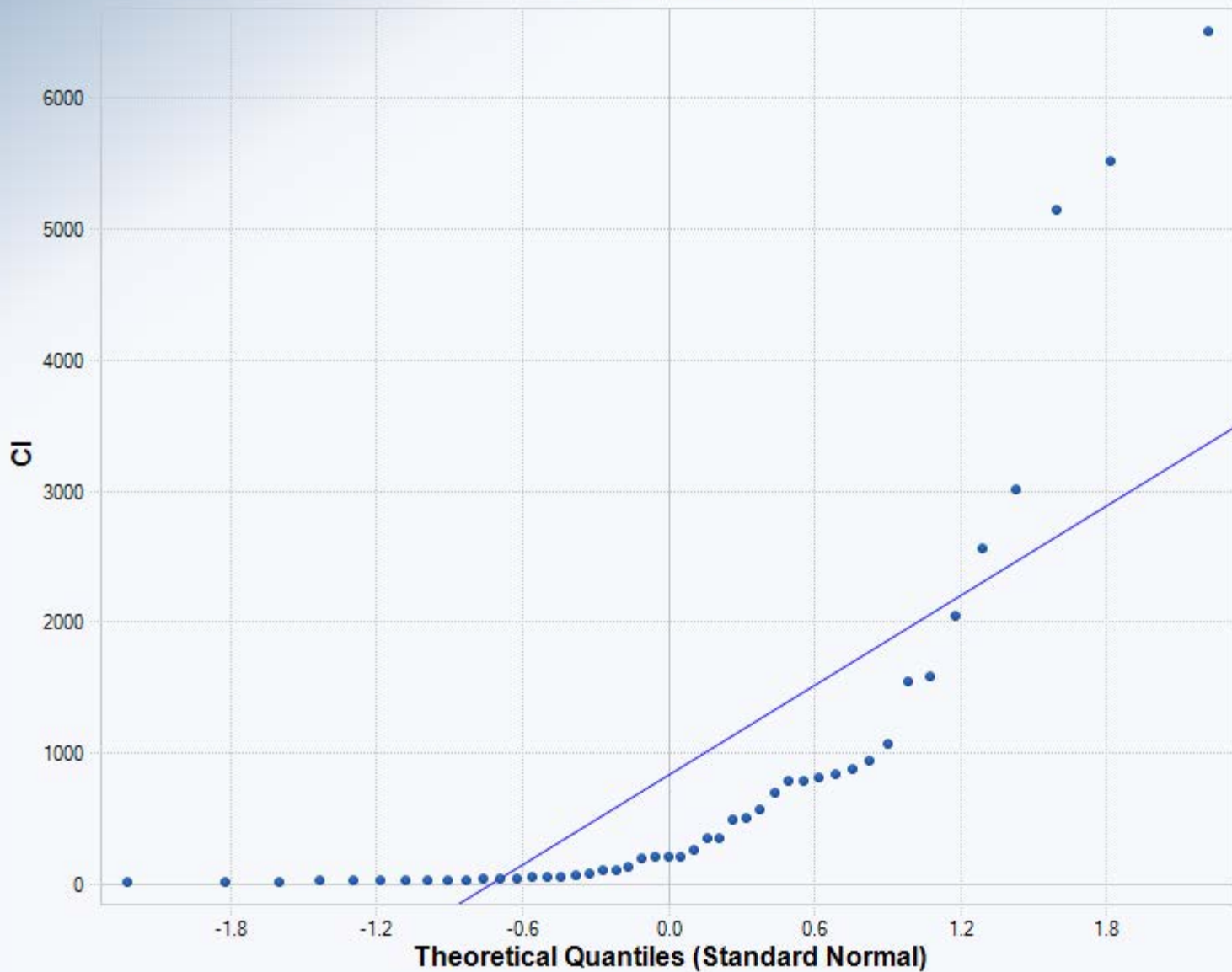
MATRIX TYPE	Field ID	Parent Sample ID	Duplicate Sample ID	RPD	Parent Sample ID	Duplicate Sample ID	RPD	Parent Sample ID	Triplicate Sample ID	RPD	Parent Sample ID	Triplicate Sample ID	RPD									
														Date Sampled	GW48_11/05/17	QC101_11/05/17	GW52_120517	QC106_120517	GW48_11/05/17	QC102_11/05/17	GW52_120517	QC107_120517
Analyte	Units	LOD																				
Total Organic Carbon	mg/L	1 : 5 (Interlab)	33	31	6.25	39	33	16.67	33	34	2.99	39	44	12.05								
Total Dissolved Solids	mg/L	10	2470	2450	0.81	1040	1030	0.97	2470	1100	76.75	1040	1100	5.61								
pH (Lab)	pH Units	0.01 : 0.1 (Interlab)	6.91	6.93	0.29	6.86	6.9	0.58	6.91	7.5	8.19	6.86	7.1	3.44								
Total Oxidised Sulfur as SO4 2-	mg/L	1	699	697	0.29	244	252	3.23	699			244										
C6-C9 fraction	µg/L	20	<20	<20	0.00	20	20	0.00	<20	<20	0.00	20	<20	0.00								
C10-C14 fraction	µg/L	50	<50	<50	0.00	<50	<50	0.00	<50	<50	0.00	<50	<50	0.00								
C15-C28 fraction	µg/L	100	<100	<100	0.00	<100	<100	0.00	<100	<100	0.00	<100	<100	0.00								
C29-C36 fraction	µg/L	50 : 100 (Interlab)	<50	<50	0.00	<50	<50	0.00	<50	<100	0.00	<50	<100	0.00								
C10-C36 fraction (sum)	µg/L	50 : 100 (Interlab)	<50	<50	0.00	<50	<50	0.00	<50	<100	0.00	<50	<100	0.00								
C6-C10 fraction	µg/L	20	<20	<20	0.00	20	20	0.00	<20	<20	0.00	20	<20	0.00								
C6-C10 fraction (minus BTEX)(F1)	µg/L	20	<20	<20	0.00	<20	<20	0.00	<20	<20	0.00	<20	<20	0.00								
>C10-C16 fraction	µg/L	100 : 50 (Interlab)	<100	<100	0.00	<100	<100	0.00	<100	<50	0.00	<100	<50	0.00								
>C10-C16 (minus Naphthalene)(F2)	µg/L	100 : 50 (Interlab)	<100	<100	0.00	<100	<100	0.00	<100	<50	0.00	<100	<50	0.00								
>C16-C24 fraction	µg/L	100	<100	<100	0.00	<100	<100	0.00	<100	<100	0.00	<100	<100	0.00								
>C24-C40 fraction	µg/L	100	<100	<100	0.00	<100	<100	0.00	<100	<100	0.00	<100	<100	0.00								
>C10-C40 fraction (sum)	µg/L	100	<100	<100	0.00	<100	<100	0.00	<100	<100	0.00	<100	<100	0.00								
Benzene	µg/L	1	<1	<1	0.00	8	7	13.33	<1	<1	0.00	8	6	28.57								
Benzene	µg/L	1	<1	<1	0.00	7	6	15.38	<1	<1	0.00	7	6	15.38								
Toluene	µg/L	2 : 1 (Interlab)	<2	<2	0.00	<2	<2	0.00	<2	<1	0.00	<2	<1	0.00								
Toluene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Ethylbenzene	µg/L	2 : 1 (Interlab)	<2	<2	0.00	<2	<2	0.00	<2	<1	0.00	<2	<1	0.00								
Ethylbenzene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
m&p-Xylene	µg/L	2	<2	<2	0.00	<2	<2	0.00	<2	<2	0.00	<2	<2	0.00								
m&p-Xylene	µg/L	1 : 2 (Interlab)	<1	<1	0.00	<1	<1	0.00	<1	<2	0.00	<1	<2	0.00								
o-Xylene	µg/L	2 : 1 (Interlab)	<2	<2	0.00	<2	<2	0.00	<2	<1	0.00	<2	<1	0.00								
o-Xylene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Total Xylenes	µg/L	2 : 3 (Interlab)	<2	<2	0.00	<2	<2	0.00	<2	<3	0.00	<2	<3	0.00								
Styrene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	2	66.67	<1	<1	0.00								
Isopropylbenzene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
n-Butylbenzene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1			<1										
n-Propylbenzene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1			<1										
p-Isopropyltoluene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1			<1										
sec-Butylbenzene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1			<1										
tert-Butylbenzene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1			<1										
1,2,4-trimethylbenzene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
1,3,5-trimethylbenzene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Total BTEX	µg/L	1	<1	<1	0.00	7	6	15.38	<1			7										
Naphthalene (VOC)	µg/L	5 : 1 (Interlab)	<5	<5	0.00	<5	<5	0.00	<5	<10	0.00	<5	<10	0.00								
Naphthalene	µg/L	5 : 1 (Interlab)	<5	<5	0.00	<5	<5	0.00	<5	<1	0.00	<5	<1	0.00								
Naphthalene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Acenaphthylene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Acenaphthene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Anthracene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Fluorene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Phenanthrene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Fluoranthene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Benzo(a)anthracene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Benzo(k)fluoranthene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Benzo(b)fluoranthene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Benzo(a)pyrene	µg/L	0.5 : 1 (Interlab)	<0.5	<0.5	0.00	<0.5	<0.5	0.00	<0.5	<1	0.00	<0.5	<1	0.00								
Benzo(a)pyrene TEQ (zero)	µg/L	0.5	<0.5	<0.5	0.00	<0.5	<0.5	0.00	<0.5			<0.5										
Chrysene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Pyrene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Benzo(g,h)perylene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Dibenz(a,h)anthracene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Indeno(1,2,3-cd)pyrene	µg/L	1	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00	<1	<1	0.00								
Sum of PAHs	µg/L	0.5 : 1 (Interlab)	<0.5	<0.5	0.00	<0.5	<0.5	0.00	<0.5	<1	0.00	<0.5	<1	0.00								
Aluminium	mg/L	0.01 : 0.05 (Interlab)	16.3	16.9	3.61	4.06	4.39	7.81	16.3	17	4.20	4.06	3.6	12.01								
Aluminium (Filtered)	mg/L	0.01 : 0.05 (Interlab)	0.1	0.12	18.18	0.32	0.3	6.45	0.1	0.12	18.18	0.32	0.25	24.56								
Arsenic	mg/L	0.001	0.022	0.024	8.70	0.015	0.015	0.00	0.022	0.024	8.70	0.015	0.015	0.00								
Arsenic (Filtered)	mg/L	0.001	0.007	0.008	13.33	0.01	0.01	0.00	0.007	0.006	15.38	0.01	0.008	22.22								
Cadmium	mg/L	0.0001 : 0.0002 (Interlab)	0.0001	0.0001	0.00	<0.0001	<0.0001	0.00	0.0001	<0.0002	0.00	<0.0001	<0.0002	0.00								
Cadmium (Filtered)	mg/L	0.0001 : 0.0002 (Interlab)	<0.0001	<0.0001	0.00	<0.0001	<0.0001	0.00	<0.0001	<0.0002	0.00	<0.0001	<0.0002	0.00								
Chromium	mg/L	0.001	0.054	0.055	1.83	0.022	0.023	4.44	0.054	0.056	3.64	0.022	0.022	0.00								
Chromium (Filtered)	mg/L	0.001	0.003	0.003	0.00	0.008	0.008	0.00	0.003	0.003	0.00	0.008	0.008	0.00								
Copper	mg/L	0.001	0.011	0.011	0.00	0.004	0.004	0.00	0.011	0.011	0.00	0.004	0.004	0.00								
Copper (Filtered)	mg/L	0.001	<0.001	<0.001	0.00	<0.001	<0.001	0.00	<0.001	<0.001	0.00	<0.001	<0.001	0.00								
Iron	mg/L	0.05	23.4	24.1	2.95	4.88	4.8	2.53	23.4	27	14.29	4.88	4.9	8.59								
Iron (Filtered)	mg/L	0.05	3.45	3.55	2.86	1.21	1.21	0.00	3.45	3.7	6.99	1.21	1.1	9.52								
Lead	mg/L	0.001	0.015	0.015	0.00	0.004	0.004	0.00	0.015	0.015	0.00	0.004	0.004	0.00								
Lead (Filtered)	mg/L	0.001	<0.001	<0.001	0.00	<0.001	<0.001	0.00	<0.001	<0.001	0.00	<0.001	<0.001	0.00								
Manganese	mg/L	0.001 : 0.005 (Interlab)	0.094	0.097	3.14				0.094	0.096	2.11											
Manganese (Filtered)	mg/L	0.001 : 0.005 (Interlab)	0.057	0.05	13.08	0.033	0.033	0.00	0.057	0.058	1.74	0.033										
Mercury	mg/L	0.0001	<0.0001	<0.0001	0.00	<0.0001	<0.0001	0.00	<0.0001	<0.0001	0.00	<0.0001	<0.0001	0.00								
Mercury (Filtered)	mg/L	0.0001	<0.0001	<0.0001	0.00	<0.0001	<0.0001	0.00	<0.0001	<0.0001	0.00	<0.0001	<0.0001	0.00								
Nickel	mg/L	0.001	0.062	0.062	0.00	0.018	0.018	0.00	0.062	0.061	1.63	0.018	0.016									



Appendix L

QQ Plots

Q-Q Plot for CI



CI

N = 47

Mean = 826.3

Sd = 1466

Slope = 1146

Intercept = 826.3

Correlation, R = 0.766

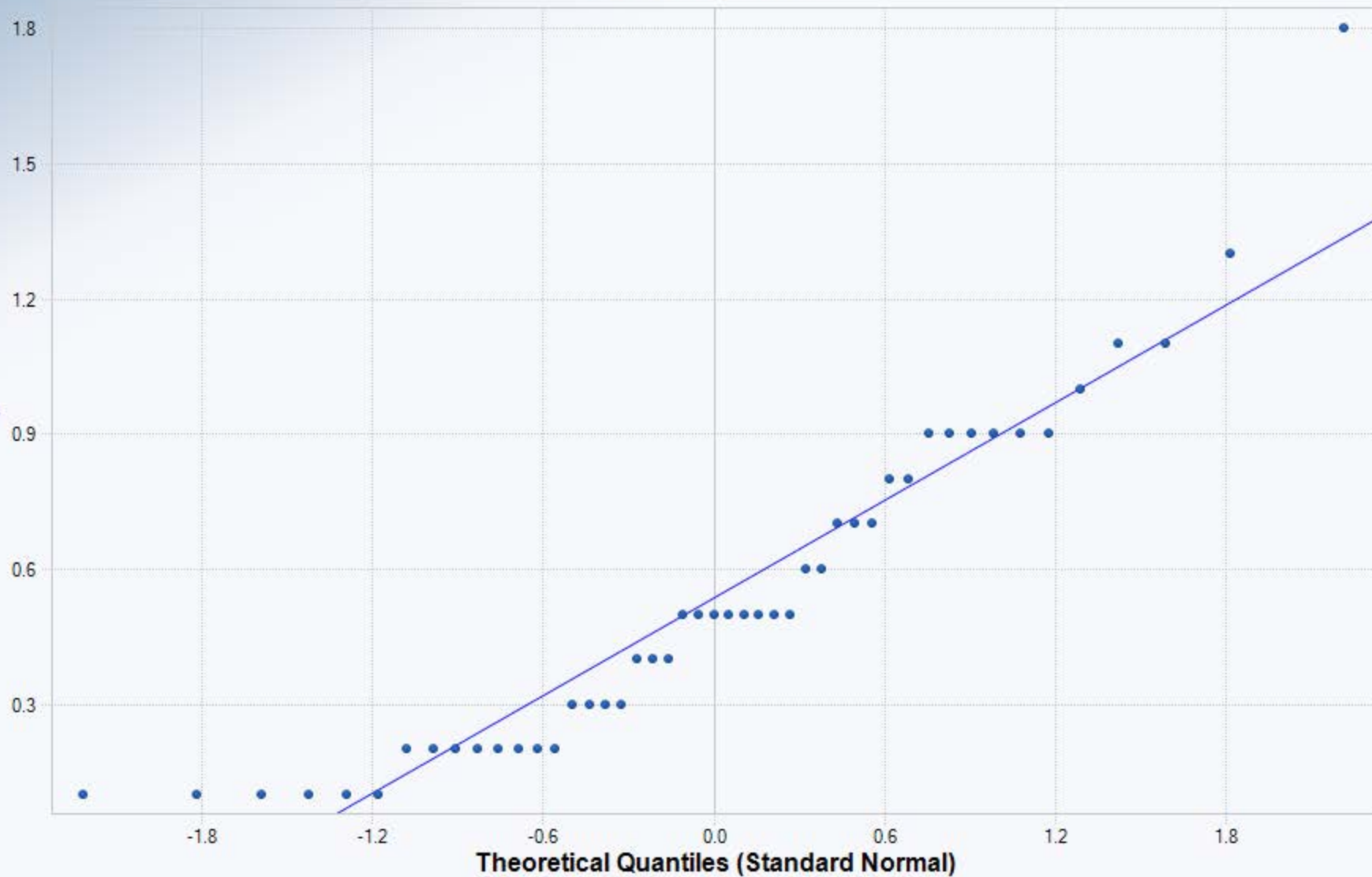
■ Best Fit Line

Q-Q Plot for F

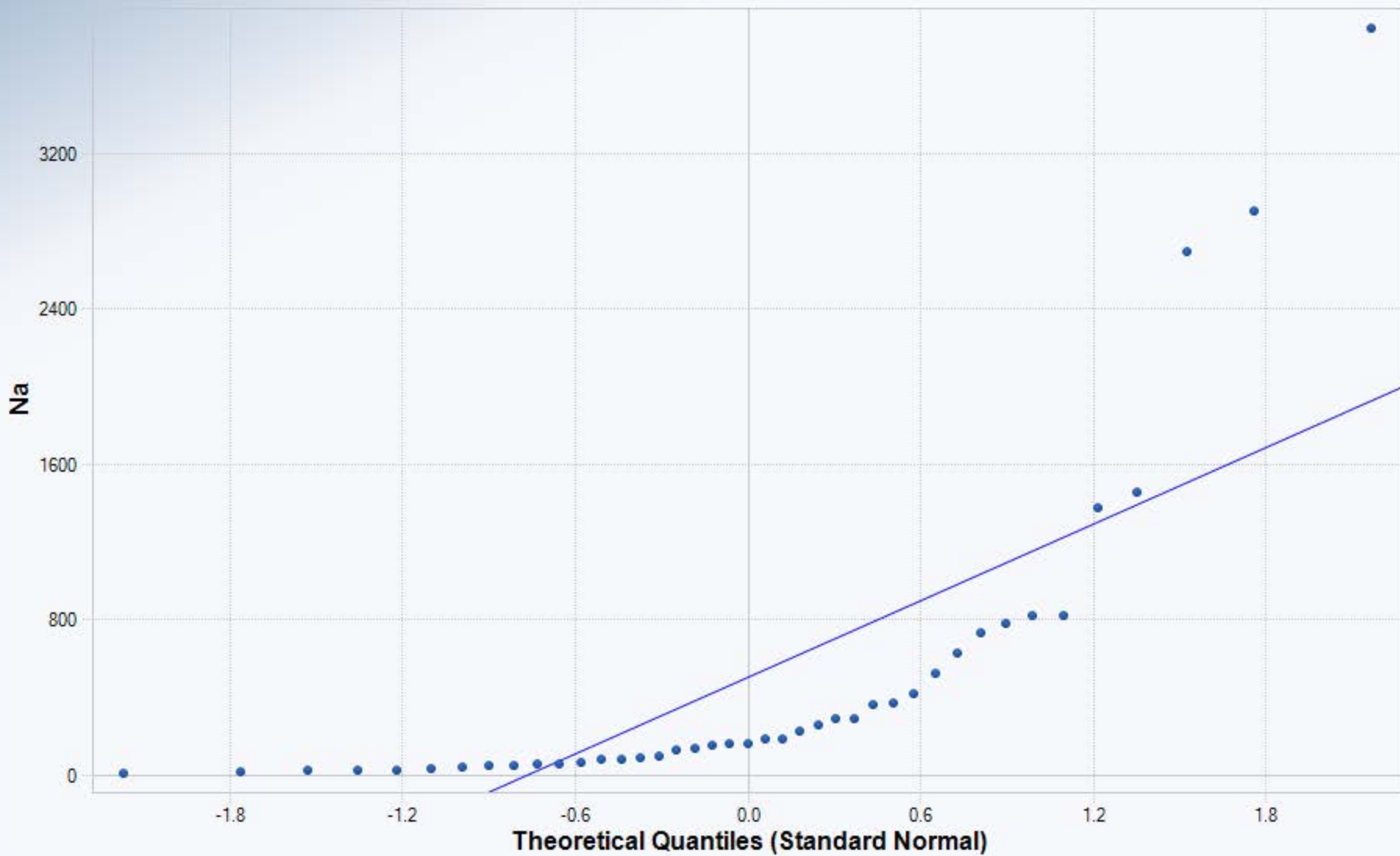
F

N = 47
Mean = 0.536
Sd = 0.373
Slope = 0.362
Intercept = 0.536
Correlation, R = 0.951

■ Best Fit Line



Q-Q Plot for Na



Na
N = 41
Mean = 500.8
Sd = 838.6
Slope = 659.3
Intercept = 500.8
Correlation, R = 0.769

■ Best Fit Line

Q-Q Plot for NH3 (as N)

NH3 (as N)

N = 47

Mean = 8.412

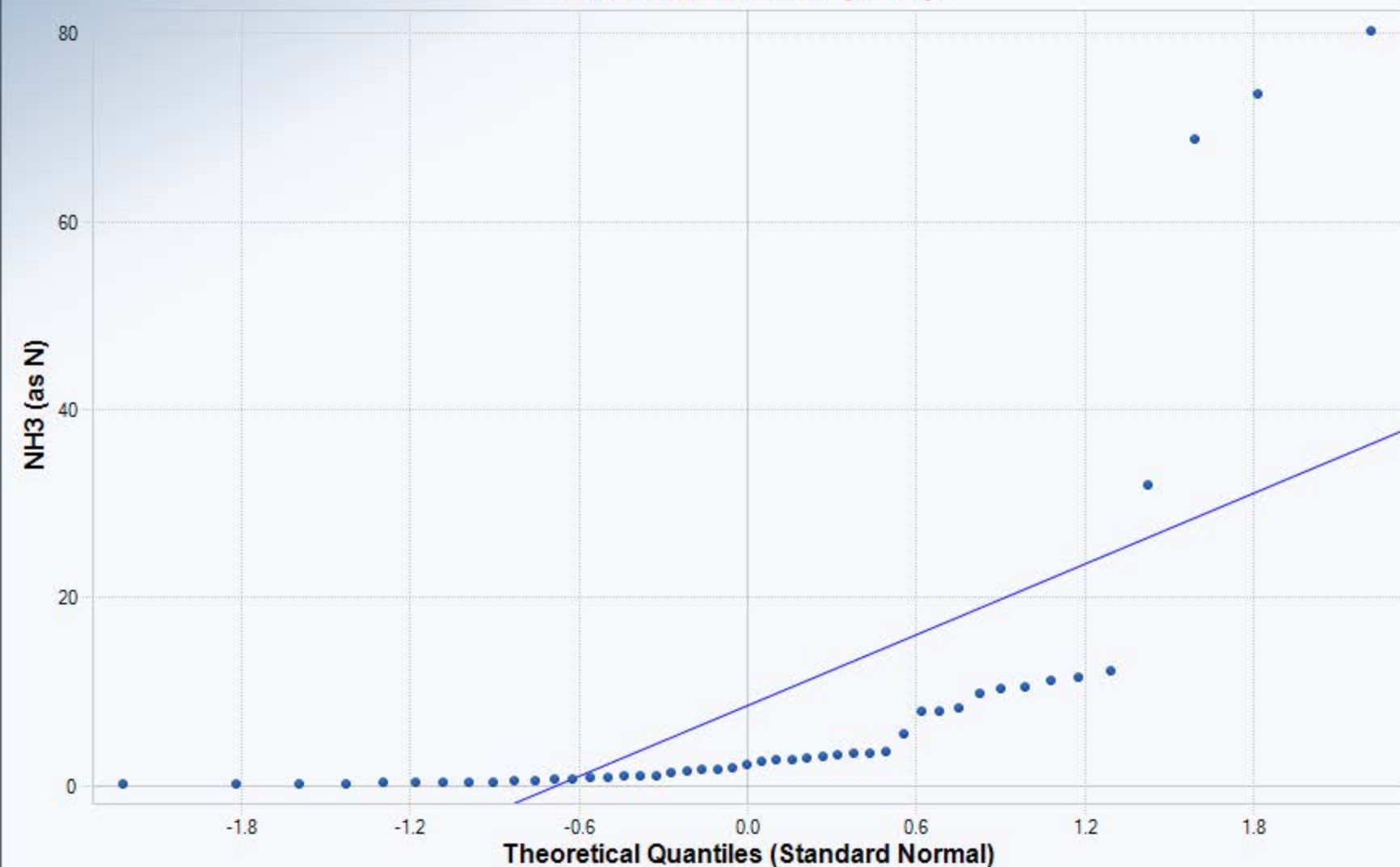
Sd = 18.26

Slope = 12.59

Intercept = 8.412

Correlation, R = 0.676

Best Fit Line



Q-Q Plot for NO3 (as N)

NO3 (as N)

N = 47

Mean = 3.879

Sd = 16.07

Slope = 7.948

Intercept = 3.879

Correlation, R = 0.485

■ Best Fit Line

NO3 (as N)

100

80

60

40

20

0

-1.8

-1.2

-0.6

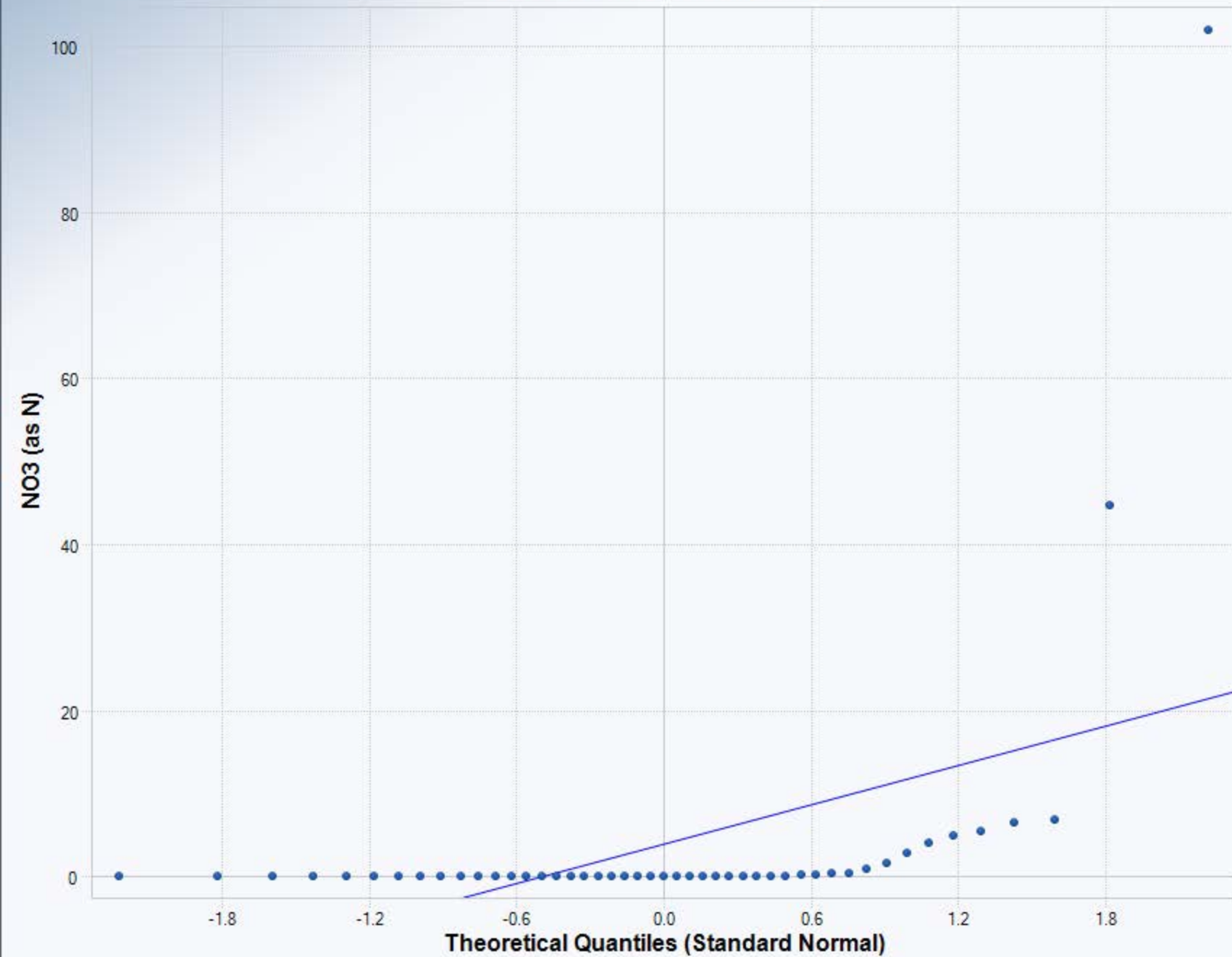
0.0

0.6

1.2

1.8

Theoretical Quantiles (Standard Normal)



Q-Q Plot for SO4

SO4

N = 47

Mean = 330.6

Sd = 431.2

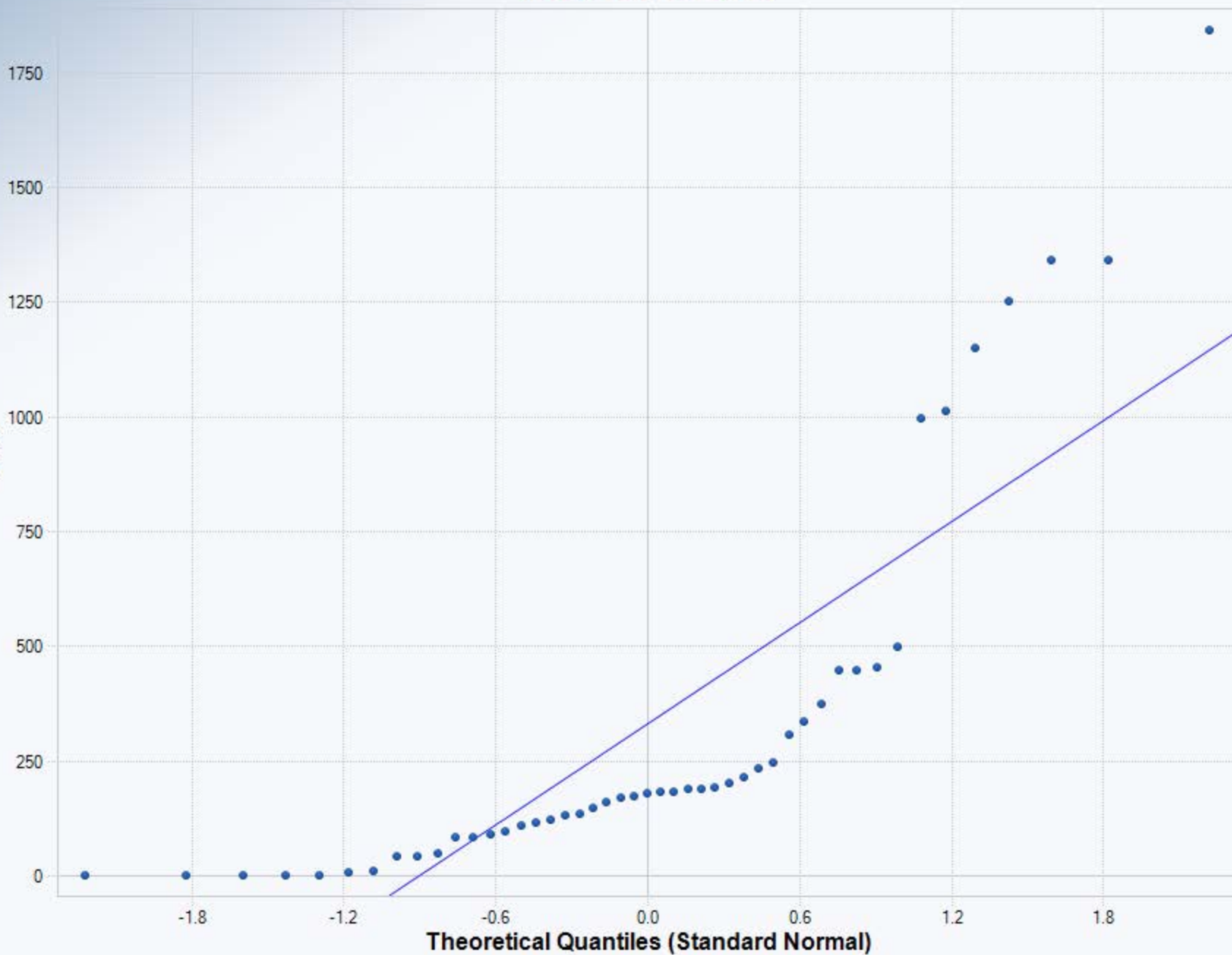
Slope = 368.1

Intercept = 330.6

Correlation, R = 0.837

■ Best Fit Line

SO4



Q-Q Plot for Sum PFHxS & PFOS

Sum PFHxS & PFOS

N = 15

Mean = 0.086

Sd = 0.152

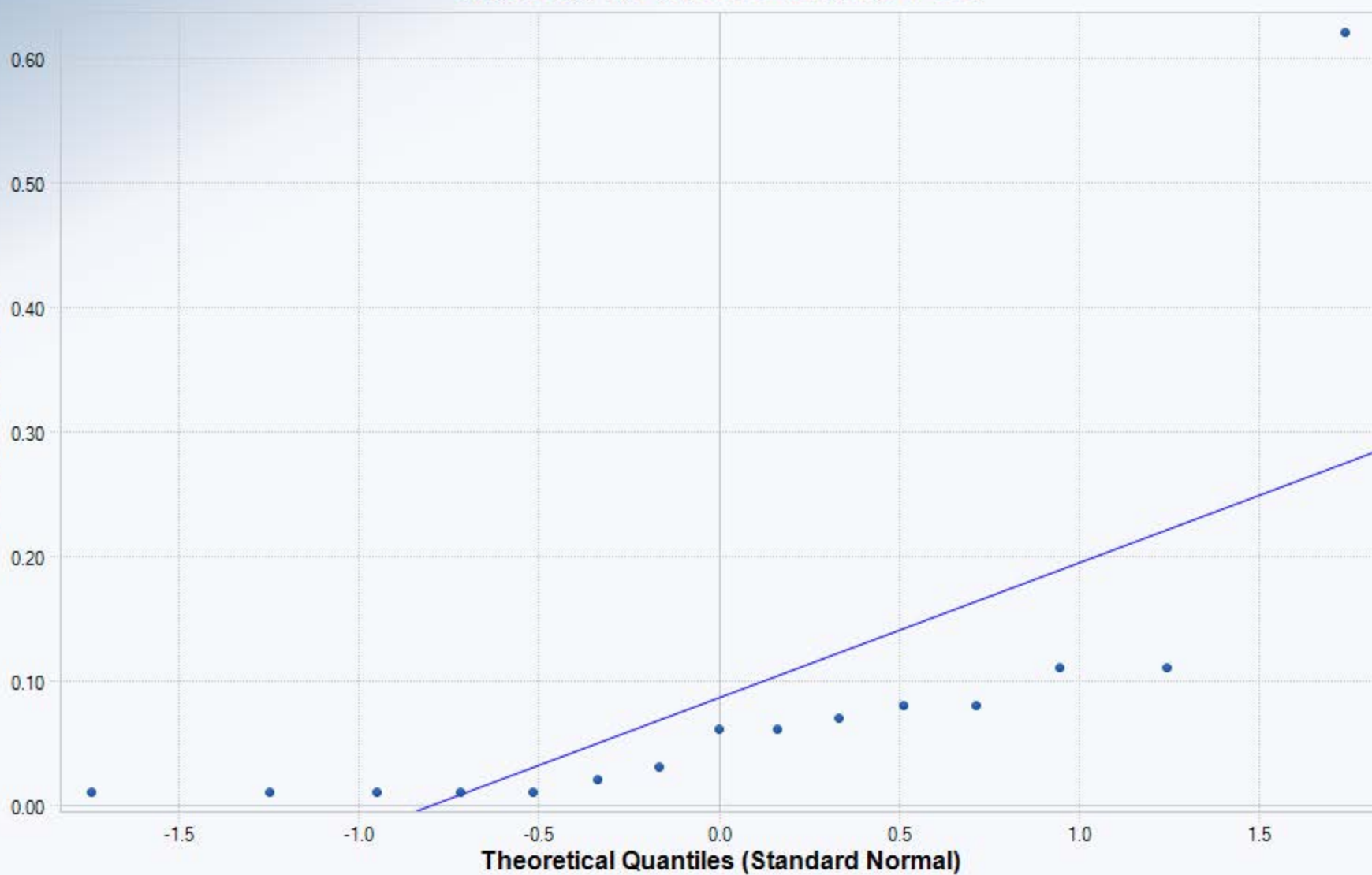
Slope = 0.109

Intercept = 0.086

Correlation, R = 0.682

■ Best Fit Line

Sum PFHxS & PFOS



Q-Q Plot for TDS

TDS

N = 41

Mean = 2312

Sd = 2776

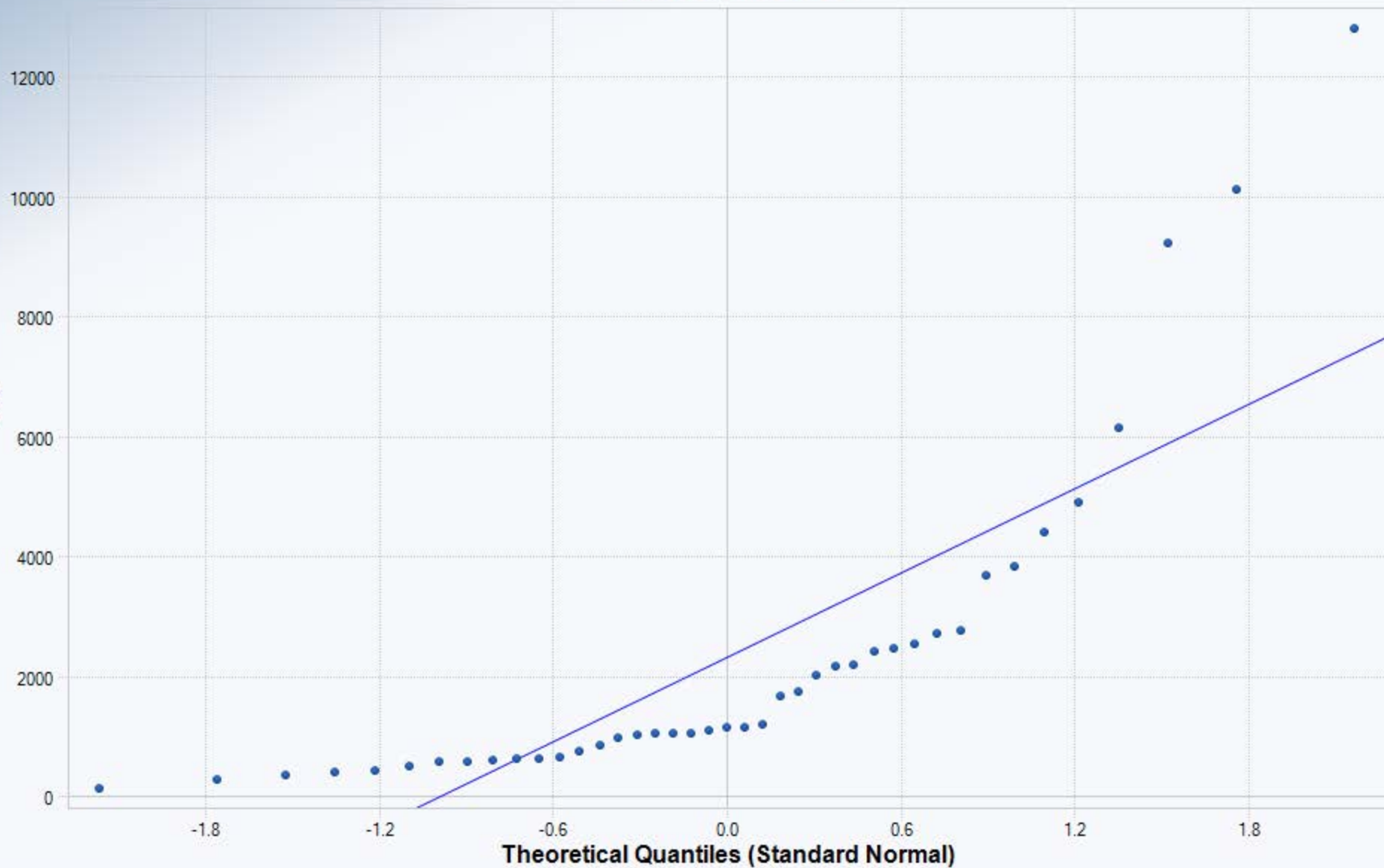
Slope = 2344

Intercept = 2312

Correlation, R = 0.826

■ Best Fit Line

TDS

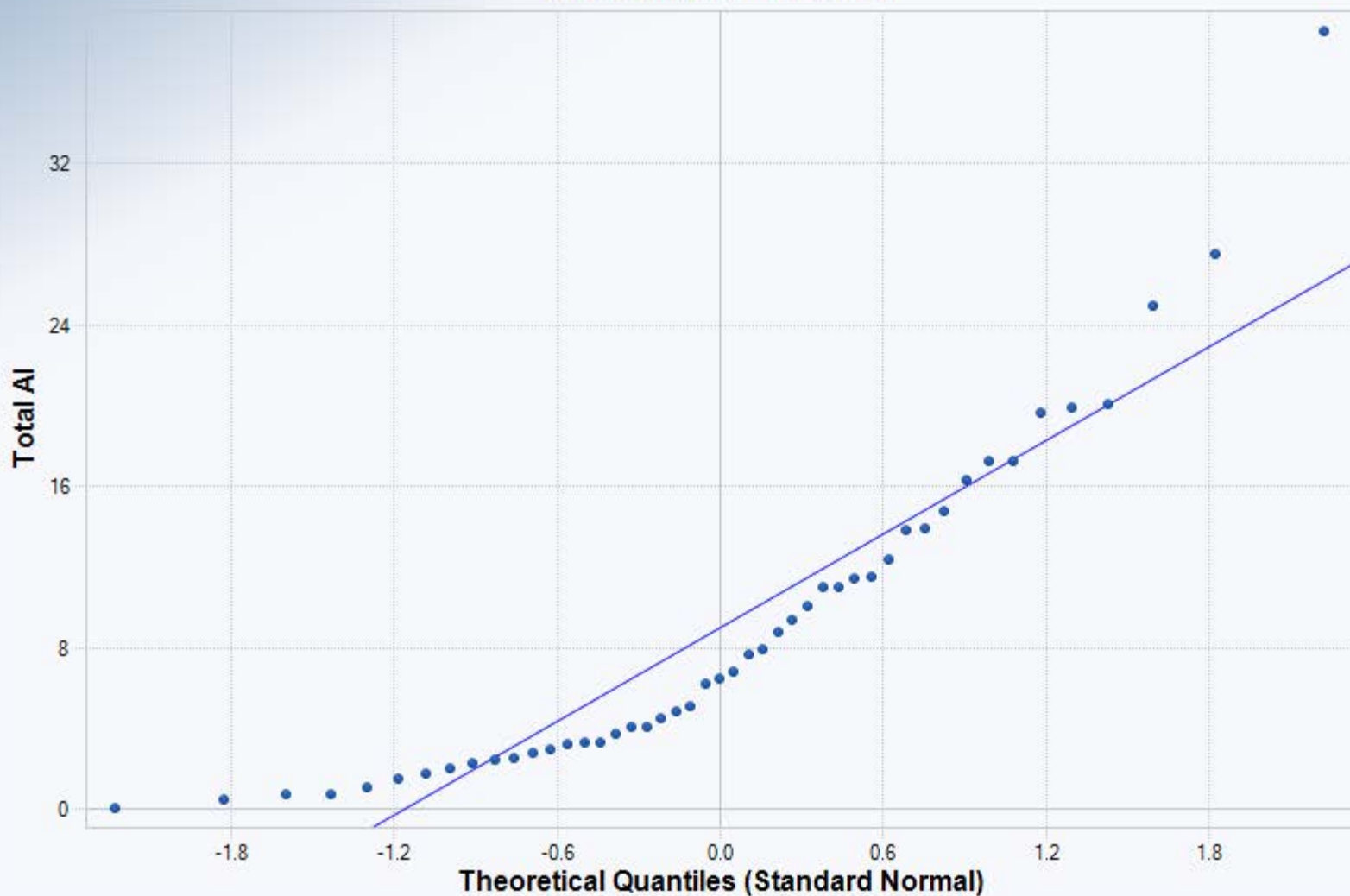


Q-Q Plot for Total AI

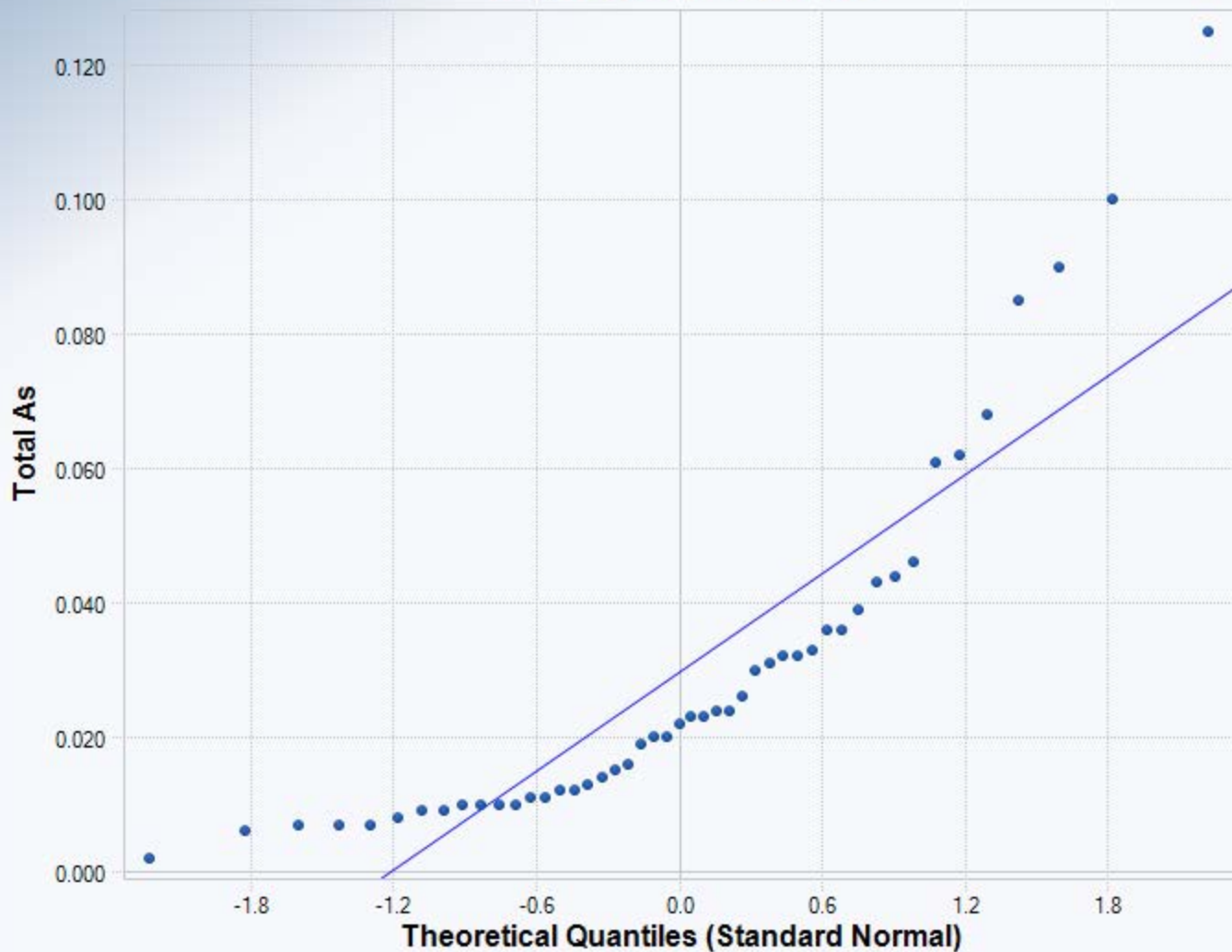
Total AI

N = 47
Mean = 8.95
Sd = 8.194
Slope = 7.753
Intercept = 8.95
Correlation, R = 0.928

■ Best Fit Line



Q-Q Plot for Total As



Total As

N = 47

Mean = 0.0296

Sd = 0.027

Slope = 0.0245

Intercept = 0.0296

Correlation, R = 0.891

■ Best Fit Line

Q-Q Plot for Total Cd

Total Cd

N = 47

Mean = 4.7660E-4

Sd = 0.0015

Slope = 7.2165E-4

Intercept = 4.7660E-4

Correlation, R = 0.473

■ Best Fit Line

Total Cd

0.0100
0.0080
0.0060
0.0040
0.0020
0.0000

-1.8

-1.2

-0.6

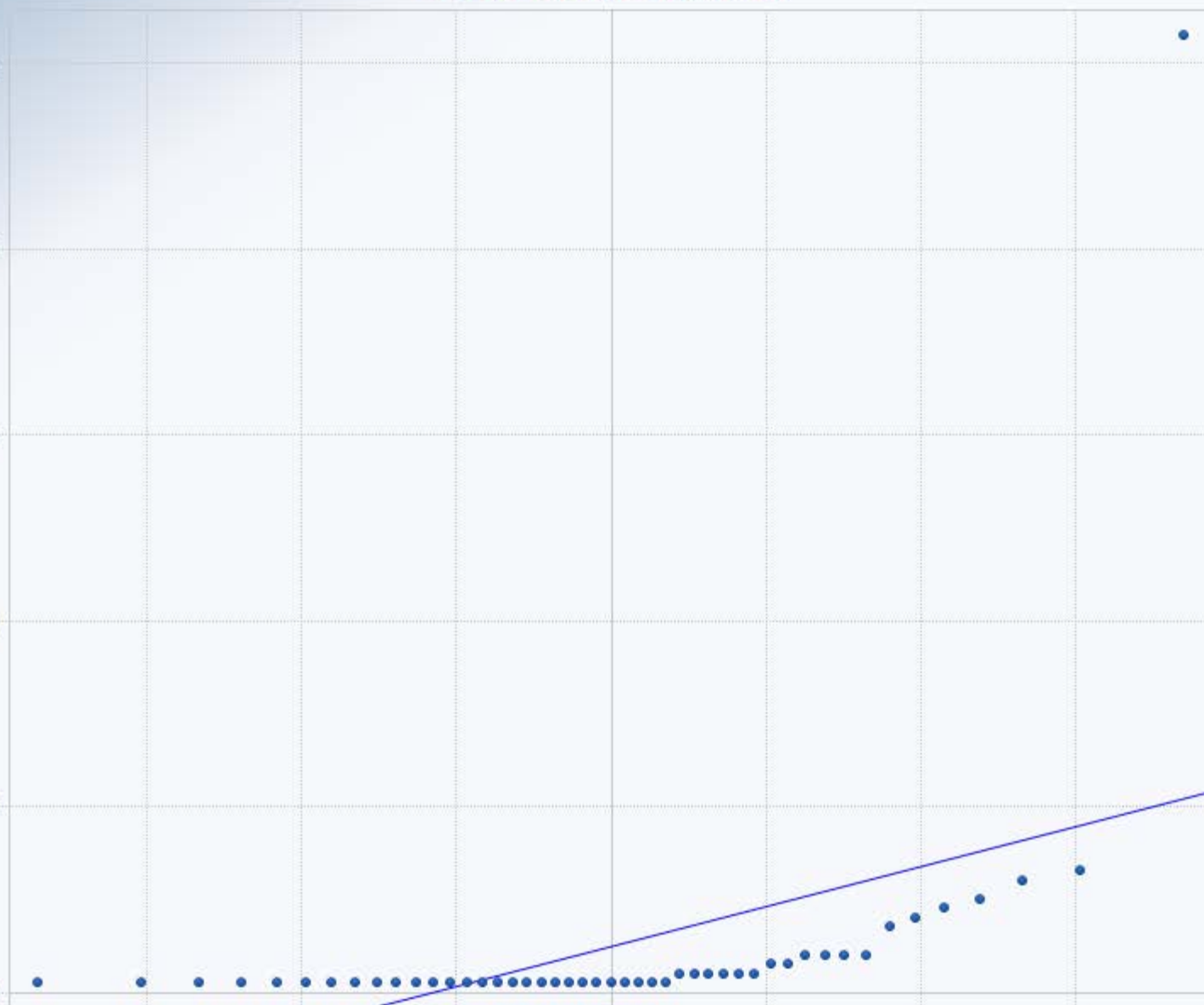
0.0

0.6

1.2

1.8

Theoretical Quantiles (Standard Normal)



Q-Q Plot for Total Cr

Total Cr

N = 47

Mean = 0.0312

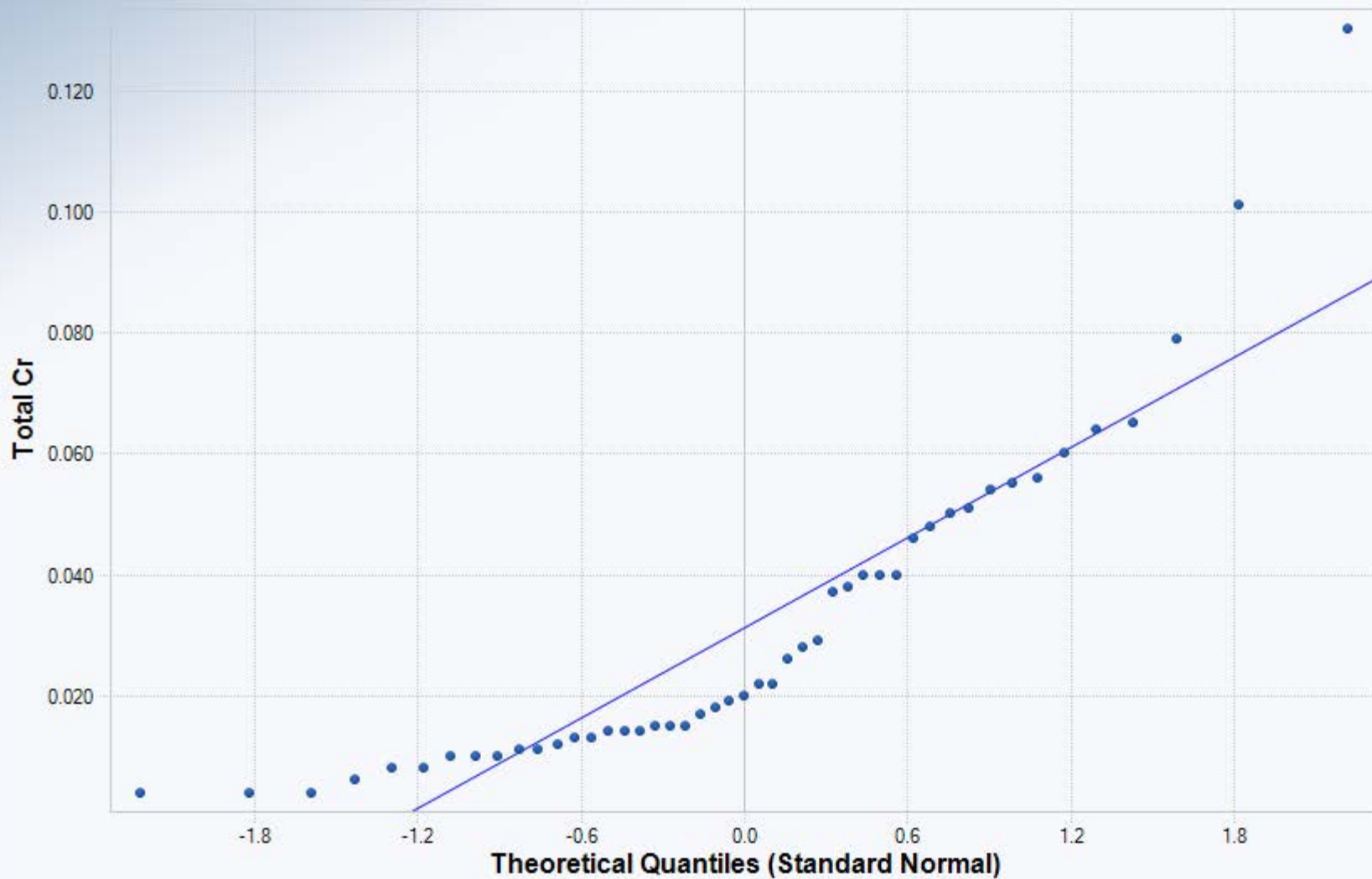
Sd = 0.0267

Slope = 0.0249

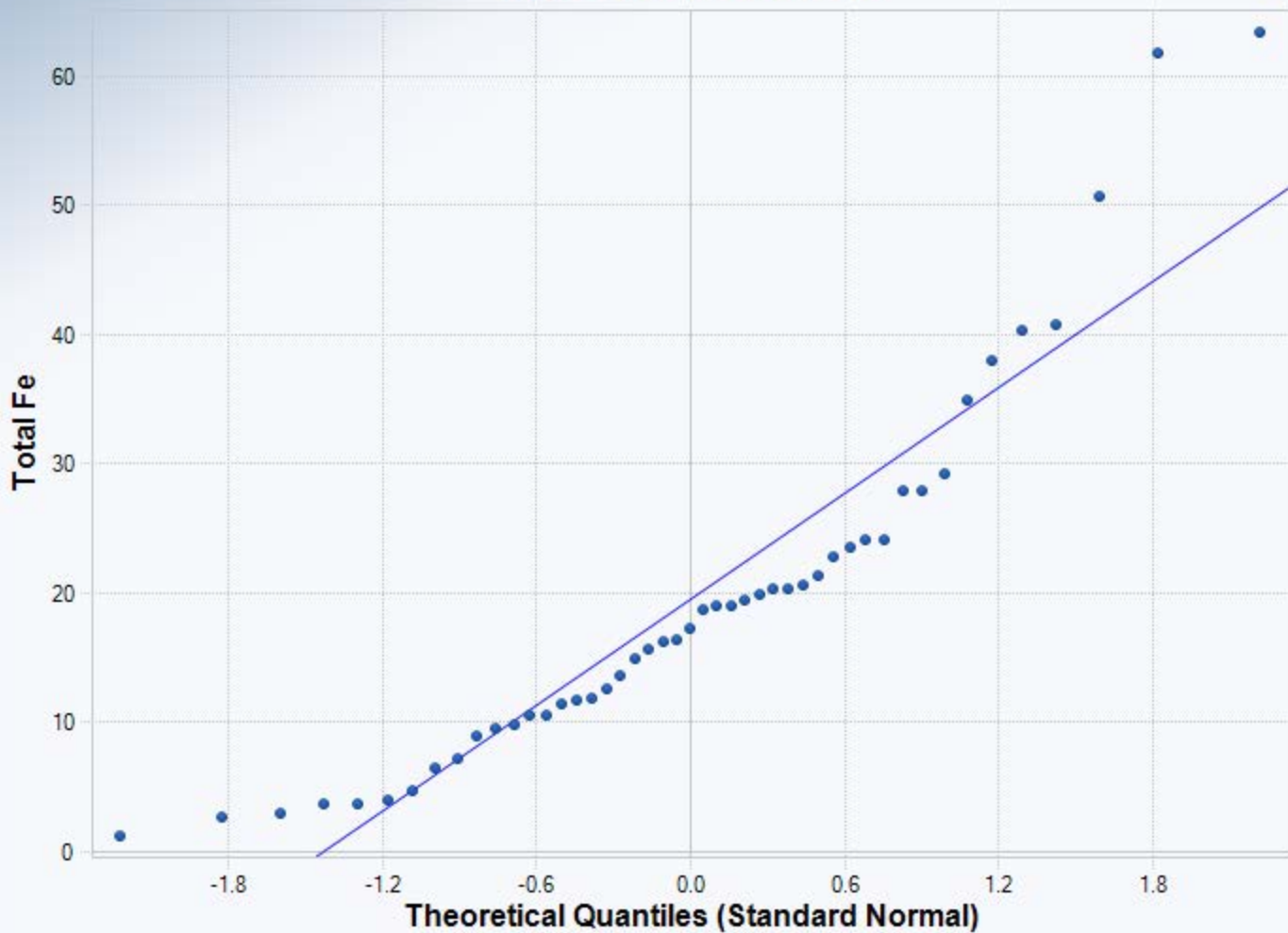
Intercept = 0.0312

Correlation, R = 0.912

■ Best Fit Line



Q-Q Plot for Total Fe



Total Fe

N = 47

Mean = 19.41

Sd = 14.34

Slope = 13.71

Intercept = 19.41

Correlation, R = 0.938

■ Best Fit Line

Q-Q Plot for Total Mn

Total Mn

N = 41

Mean = 0.329

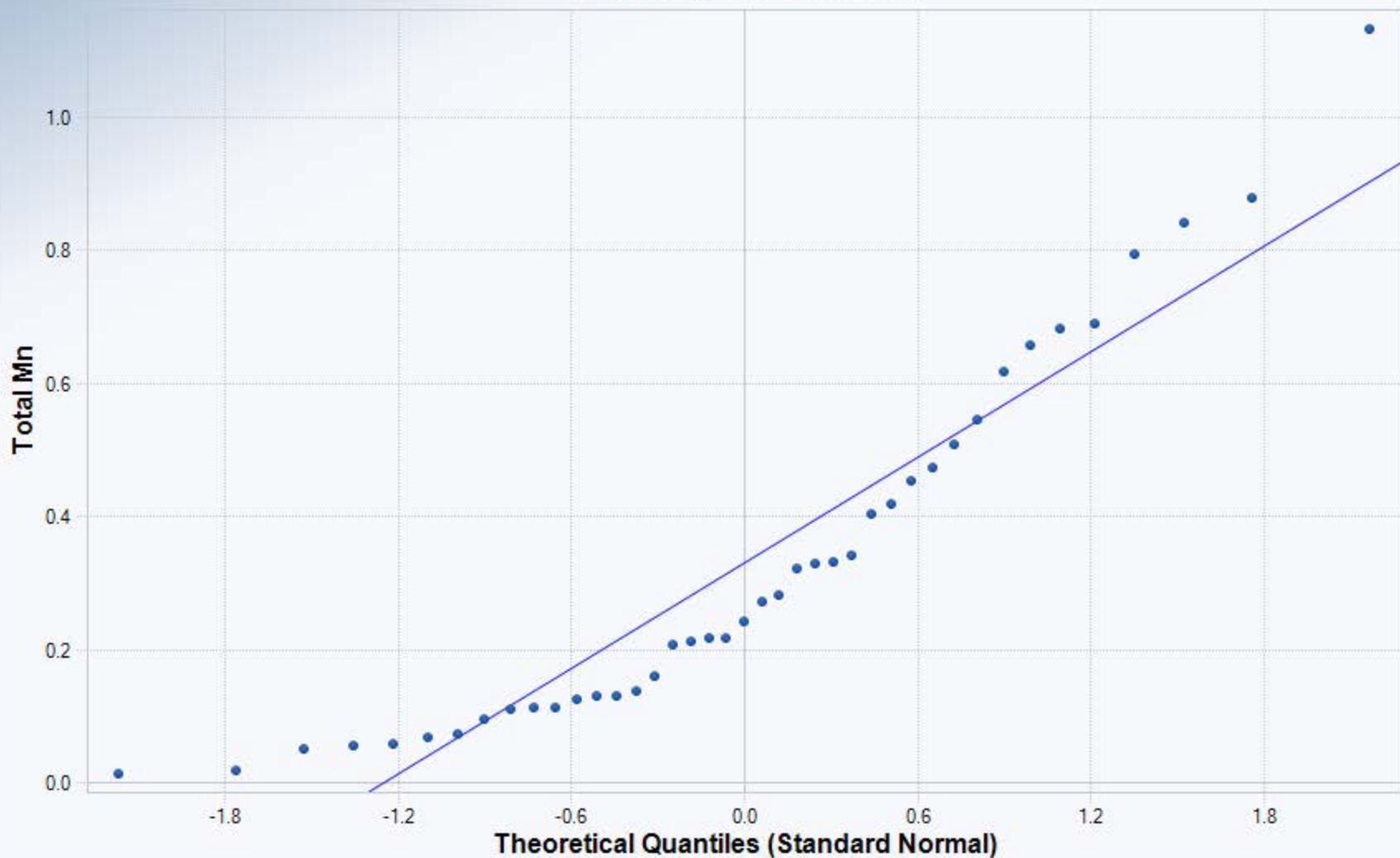
Sd = 0.274

Slope = 0.265

Intercept = 0.329

Correlation, R = 0.946

Best Fit Line



Q-Q Plot for Total Ni

Total Ni

N = 47

Mean = 0.0527

Sd = 0.0385

Slope = 0.0371

Intercept = 0.0527

Correlation, R = 0.946

■ Best Fit Line

Total Ni

0.140

0.120

0.100

0.080

0.060

0.040

0.020

-1.8

-1.2

-0.6

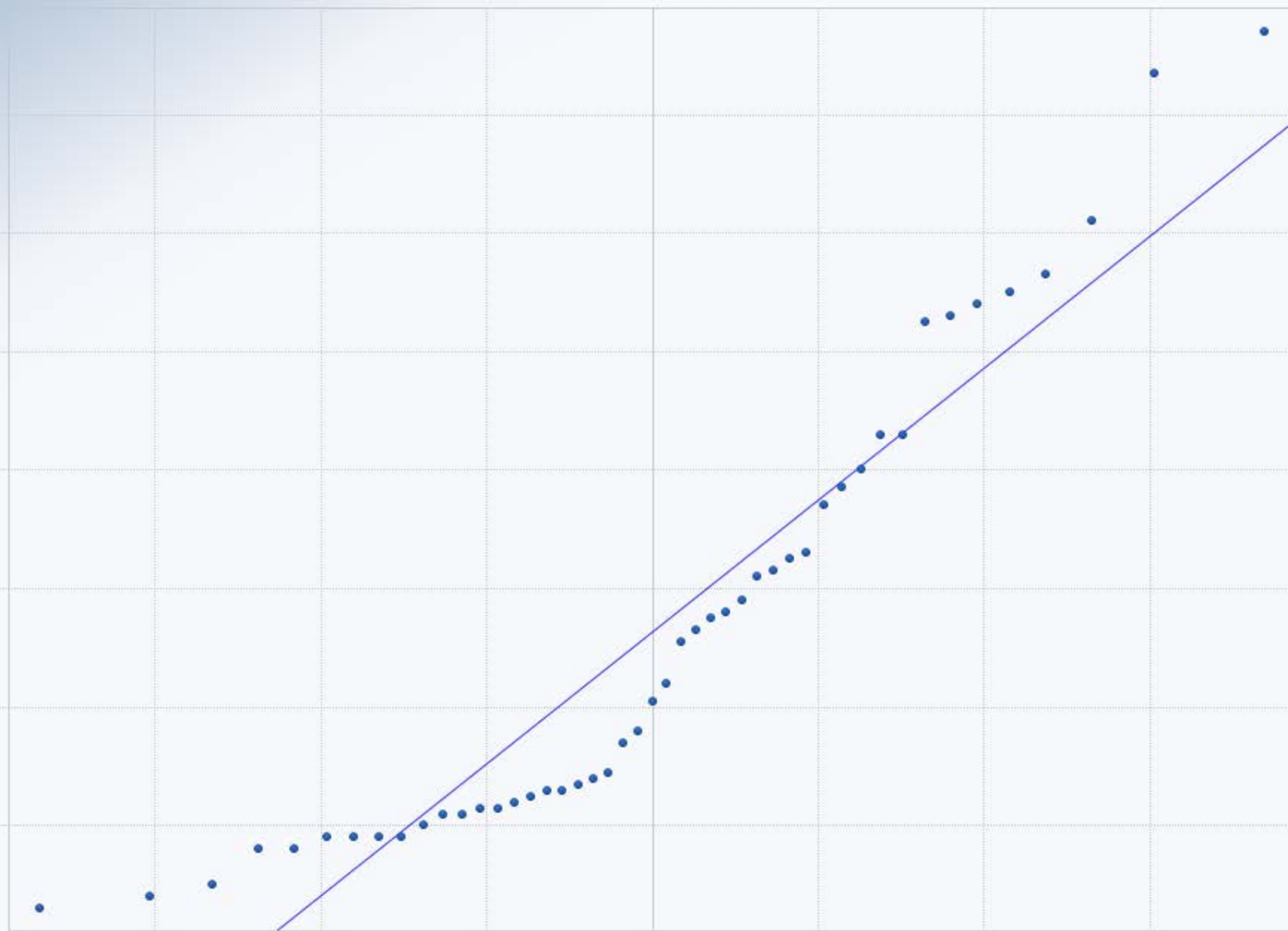
0.0

0.6

1.2

1.8

Theoretical Quantiles (Standard Normal)



Q-Q Plot for Total Pb

Total Pb

N = 47

Mean = 0.0468

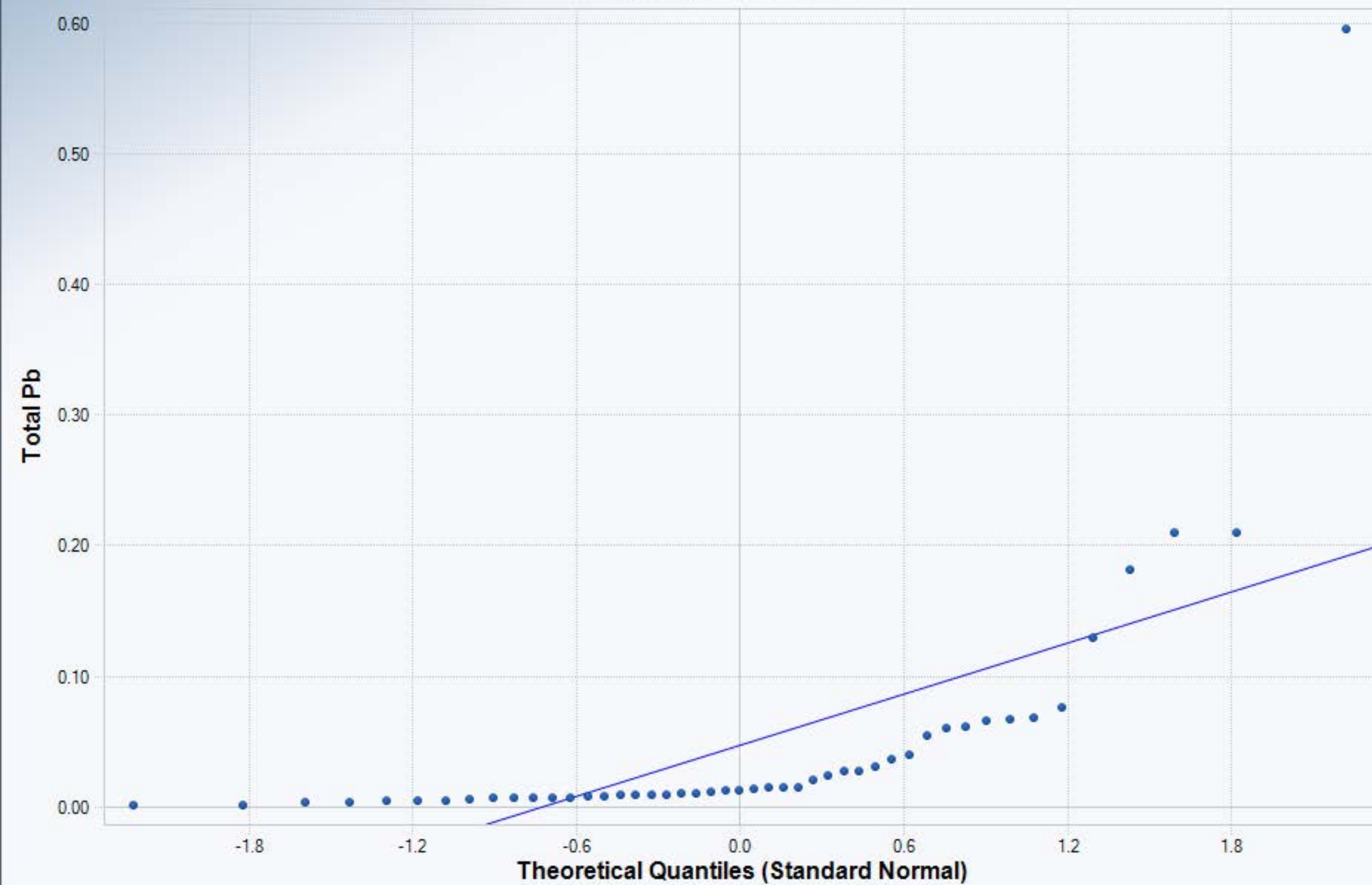
Sd = 0.0963

Slope = 0.0657

Intercept = 0.0468

Correlation, R = 0.669

■ Best Fit Line



Q-Q Plot for TRHC10-C40

TRHC10-C40

N = 47

Mean = 255.7

Sd = 357.7

Slope = 254.8

Intercept = 255.7

Correlation, R = 0.698

■ Best Fit Line

TRHC10-C40

2000

1600

1200

800

400

-1.8

-1.2

-0.6

0.0

0.6

1.2

1.8

Theoretical Quantiles (Standard Normal)

