

REPORT NO.

210074_V3

SUPPLEMENTARY GROUNDWATER INVESTIGATION AT FORMER SOUTH MELBOURNE GASWORKS

ENVIRONMENTAL EARTH SCIENCES VIC REPORT TO CITY OF PORT PHILLIP APRIL 2014 VERSION 3











EXECUTIVE SUMMARY

Environmental Earth Sciences VIC was requested by City of Port Phillip (CoPP) to undertake a supplementary groundwater investigation at the property located in Albert Park and is bounded by Graham Street to the south; Pickles Street to the west; Richardson Street to the north; and Foote Street/Bridport Street to the east (the site).

Objectives

The objectives of this supplementary groundwater investigation are to:

- evaluate the inferred changes of contaminants of concern in selected wells with elevated concentrations;
- provide spatial interpretation of data associated with the extent of groundwater contamination offsite;
- confirm that the sewers are still intercepting the majority of the groundwater migrating from the site; and
- establish whether further migration of contamination has occurred since April 2011 groundwater sampling.

The general scope of works undertaken at the site between 24 and 27 June 2013:

- gauging of all groundwater wells located on and off-site with an oil/water interface meter to measure standing water levels (SWL) and to interpret the inferred groundwater flow directions;
- groundwater sampling of selected wells using a low flow micropurge technique to confirm the presence and absence of chemicals of concern and to confirm that the sewers are intercepting the majority of the groundwater migrating from the site; and
- comparison of historical to current results to confirm the trending of chemicals of concern.

Groundwater Contamination

Elevated organic and inorganic results were identified at the time of this groundwater assessment in both onsite and off-site wells which exceeded the adopted criteria for groundwater classified as Segment A2 and these include: MAH's, naphthalene, TPH, selected inorganics such as heavy metals, chloride, ammonia, sulfate, cyanide, total dissolved solids, nitrate and pH

The onsite groundwater conditions precluded Segment A2 groundwater beneficial uses (maintenance of ecosystems, potable water supply, irrigation, stock watering, industrial water use and primary contact recreation). However, these are not considered to be relevant as the site is currently occupied as public open space and no extraction bores were installed for any beneficial uses including recreational purposes.

The off-site groundwater conditions precluded Segment A2 groundwater beneficial uses (maintenance of ecosystem, potable water supply, irrigation, stock watering, industrial water use and primary contact recreation). Although, given the urban setting of the site, the fact that all groundwater discharging from the site is captured via the surrounding sewer network, the availability of reticulated mains water, the low yield and controls over groundwater extraction, it is considered unlikely that groundwater will be extracted for any of the beneficial uses under Segment A2. However, consideration should be given to the north and north-eastern residential properties.



Inferred Groundwater Changes Assessment

The groundwater contamination conditions onsite and off-site are relatively stable (with slight increase or decrease) with some rise of contaminant concentrations (above background concentrations) but the long term trends of chemicals of concern were generally stable over the years and the dissolved contaminant plume is considered to be stable:

On-Site (OS) Wells

The increased chemical concentrations in some locations in the OS Wells can be considered to be a combination of ongoing impacts from the site, off-site sources and background concentrations. The greatest increase in potential gasworks related contaminants of concern $[NH_3 \text{ and/or TPH}(C_{10}-C_{36})]$ were observed at GW2, GW3 (based on data up to 2011 only), GW4, GW18, GW19, GW24 and GW41 which is consistent with the inferred radial groundwater flow directions. It can be considered that these dissolved chemicals will eventually be captured by the adjacent sewers.

North-West (NW) Wells

Based on the inferred groundwater flow directions, the increase of potential gasworks related contaminants of concern [NH₃ and/or TPH (C_{10} - C_{36})] concentrations at some locations in the NW Wells can be considered to be a combination of onsite and off-site sources (GW34 and GW36).

The increase in potential gasworks related contaminants of concern in GW32, based on the location of the well across the Pickles Street Sewer, is considered to be coming from an off-site source. In addition, higher bicarbonate and lower TDS were noted at GW32 suggesting recent recharge.

It is noted that the majority of the heavy metals results were reported higher than the previous round of sampling (2011). The increase or decrease of heavy metal concentrations cannot be compared accurately due to the difference in filtering methods undertaken (field vs lab filtered).

North-East (NE) Wells

Based on the inferred groundwater flow directions, the increase of chemical concentrations in some locations in the NE Wells can be considered to be a combination of impacts migrating from the site and other off-site sources. The greatest increase (NH_3 , NO_3 , selected heavy metals, BTEX and TPH fractions) was observed at GW38, which is consistent with the inferred flow directions, however it can be assumed that the plume will eventually be captured by the South Yarra Sewer Main.

South-East (SE) Wells

Based on the inferred groundwater flow directions and the presence of South Yarra Sewer Main, the increase of chemical concentrations (NO_3 , selected heavy metals, BTEX and TPH fractions) in some locations in the SE Wells is not considered to be as a result of impacts from the former gasworks, but could be considered background concentrations or coming from an off-site source.

Trade Waste Agreement

Assessment of groundwater samples collected during the June 2013 groundwater investigation compared against South East Water '*Standards for trade waste discharge to the sewerage system*' indicated a number of dissolved chemicals exceeding maximum allowable concentrations and/or values for discharge to the sewerage system.



Revalidation of Groundwater Flux to Sewers

The updated estimated groundwater flux of 7 ML/year (19,200 L/day) to sewers was higher than the previous estimate of 4 ML/year (Environmental Earth Sciences 2013b). The calculated flux is orders of magnitude lower than the typical daily flow rate in the sewer (estimated to be 230ML/day by Golders report 2006) and therefore the daily discharge to sewers can be considered negligible.

Risk Associated with Groundwater Contamination

As all the groundwater flowing from the site is captured by the sewerage system, it is ultimately pumped to the Werribee Treatment Plant. The flux of groundwater from the site is several orders of magnitude less than the total flow rate of sewage through the sewers to the Werribee Treatment Plant. Therefore, although several dissolved chemicals exceed the criteria for discharge to a sewerage system, contaminant concentrations are diluted by several orders of magnitude. Therefore, associated risks to workers at the treatment plant would be very low. Furthermore, the personal protective equipment routinely used by workers working on the sewers themselves would protect them from any additional contaminants introduced into the sewers from the site.

As Gasworks Park and Southport are owned by the CoPP and the State of Victoria, the extraction of groundwater onsite can be effectively controlled through management to prevent the use of groundwater on the site to reduce the risks associated with this pathway to an acceptable level.

As stated above, the capture of the groundwater by the sewers also means that there is negligible risk to ecosystems. Even if all the sewers in South Melbourne were sealed such that the natural groundwater flow system to Port Phillip Bay were restored, the hydraulic gradient towards the Bay would be so low that the groundwater would move towards the Bay at a rate that is at least an order of magnitude less than the current rate of groundwater flow towards the sewers and the travel time would likely be thousands of years. The volumetric rate of discharge to the Bay would, therefore, be very low when the contaminants ultimately reached the Bay.

In the impacted area to the north east of the site, the risks associated with it are considered to be negligible *in-situ*. Any potential risks related to the contamination would be associated with the extraction of the groundwater. Although it is considered unlikely that the local residents would extract groundwater in this area, there is potential for groundwater extraction to take place.

The nearest significant ecological receptors are the waters and sediments of Port Philip Bay, 350 m south-west of the site. Due to the fact that all of groundwater from Gasworks Park Precinct discharges to the Melbourne Water Sewer System (refer to Environmental Earth Sciences, 2013b), therefore, all contaminants being transported in groundwater from the site are captured by the sewer system. As such, there is negligible risk of impacted groundwater from Gasworks Park discharging to receiving waters (i.e. ecosystems) in the vicinity of the site.

It is noted that, based on the inferred groundwater flow directions, most (or all) groundwater discharging from the site is expected to be captured by the sewers to the west, south and east.

Environmental Earth Sciences recommends that the most effective and practical way of managing the groundwater impacts is to implement a regular groundwater monitoring (monitored natural attenuation) program via a Groundwater Quality Management Plan (refer to Remediation Action Plan Report, Environmental Earth Sciences 2013c).



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1 INTRODUCTION

This site is currently undergoing a 53V environmental audit commissioned by the City of Port Phillip (CoPP) to assess the risk of harm posed by the site. Environmental Earth Sciences has previously undertaken a groundwater investigation in 2011 and prepared a report titled *April 2011 Groundwater Investigations at Former South Melbourne Gasworks version 3* (Environmental Earth Sciences, 2013b), which is the main report to which this assessment supplements.

Based on the findings of the 2011 investigation, Environmental Earth Sciences recommended additional groundwater monitoring, focusing on the bores located onsite (OS) and to the north east (NE) of the site. In addition, selected groundwater wells were sampled within the north west (NW) and south east (SE) to confirm that the sewers are intercepting the majority of the groundwater migrating from the site.

2 OBJECTIVES AND SCOPE OF WORKS

The objectives of this supplementary groundwater investigation are to:

- evaluate the inferred changes of contaminants of concern in selected wells with elevated concentrations;
- provide spatial interpretation of data associated with the extent of groundwater contamination offsite;
- confirm that the sewers are still intercepting the majority of the groundwater migrating from the site; and
- establish whether further migration of contamination has occurred since April 2011 groundwater sampling.

The scope of works required to meet the objective included the following:

- undertake a groundwater monitoring event on selected groundwater wells;
- laboratory analysis of samples collected for chemicals of concern;
- interpretation of current and historical groundwater data; and
- preparation of a supplementary groundwater investigation report.

3 SITE IDENTIFICATION

3.1 Site location and description

The site is located in Albert Park and is bounded by Graham Street to the south; Pickles Street to the west; Richardson Street to the north; and Foote Street/Bridport Street to the east (refer to Figure 1 and Figure 2) and currently owned by CoPP and the State of Victoria.



The site covers an area of 3.21 hectares (ha) and includes 'Gasworks Arts Park' and 'Southport Community Nursing Home':

- Gasworks Arts Park incorporates 2.67 ha of the site, consisting of grassed and landscaped areas, playground, BBQ and rotunda facilities, and small wetlands, all of which are linked by gravel access tracks. Residual gasworks buildings have been retained near the entrance of the park and used as a café, bookshop, art galleries, administration area and theatre, foyer and dressing room area. Other residual gasworks buildings are scattered around the perimeter of the park and used as various art studios; and
- the Southport site covers an area of 0.54 ha and is situated in the northeast corner of the SMG site (refer to Figure 2). The Southport Community Nursing Home occupies the majority of the Southport Site (fronting Richardson Street) and incorporates a brick building (i.e. nursing home), and open grass, paving and landscaped gardens.

South Melbourne Gasworks is surrounded by low density residential houses to the north and east across Richardson Street and Foote Street. High density residential units are present across Pickles Street to the east, and to the south across Graham Street.

The nearest surface water body to the site is Port Phillip Bay approximately 350 m south of the site (Figure 1).

3.2 Summary of geology and hydrogeology

The geology onsite according to the Geological Survey of Victoria (GSV 1974) *Melbourne 1:63,360 map sheet* consists of the Port Melbourne Sands (PMS) which is described as raised beach ridges of well sorted sand, shelly sand, minor silty or clayey sand. Geology encountered onsite is generally in accordance with the expected regional geology which includes the Brighton Group sediments and Older Volcanic Basalt (in the north eastern portion of the site).

Regional groundwater flow in the basement Dargile Formation is towards Port Phillip Bay, therefore under natural hydraulic gradients, the groundwater flow direction would be expected to be towards the south to south west beneath the site.

Further discussion regarding geology and hydrogeology is presented in Environmental Earth Sciences, 2013b report.

3.3 Trade waste agreement

A "Deed of Agreement Groundwater and Gasworks Arts Park, Albert Park" exists between CoPP, Melbourne Water and South East Water. This 'Deed of Agreement' states that Melbourne Water (responsible for the South Yarra Sewer Main and Hobsons Bay Sewer Main) and South East Water (responsible for the Pickles Street Branch sewer) acknowledge that these sewers act as a control for groundwater surrounding Gasworks Arts Park and agree to accept groundwater discharging from Gasworks Arts Park. Further discussion regarding the Deed of Agreement is provided in Environmental Earth Sciences 2013b report, however, essentially CoPP has agreed to monitor groundwater contamination within vicinity of the sewers, supply data related to the groundwater conditions and notify Melbourne Water and South East Water of any changes in the groundwater conditions. As such, the groundwater results have been compared against the trade waste agreement guidelines.



3.4 Current site conditions

Currently, 42 bores exist onsite predominantly installed into the upper Brighton Group sediments. Deeper wells targeting the base of the Brighton Group were installed by Environmental Earth Sciences in 2011 (GW42D - GW44D). Well locations are shown in Figure 3.

TABLE 1 SUMMARY OF EXISTING GROUNDWATER WELLS

Location	Groundwater Wells (GW)
OS Wells	1, 2, 3, 4, 5, 18, 19, 20, 21, 22, 23, 24, 31, 35, 39, 40, 41, 42D, 43D and 44D
NW Wells	6, 32, 33, 34 and 36
NE Wells	7, 8, 26, 27, 28, 29, 30, 37 and 38
SE Wells	9, 10, 11, 12, 13, 14, 15, 16 and 25

Note: D indicates wells are "deep" and installed at the base of the aquifer hydrogeological unit (Brighton Group Sediments).

The contamination existing onsite is related to the gasworks activities which occurred previously onsite and the chemicals of concern are considered to be:

- polycyclic aromatic hydrocarbons (PAHs) including naphthalene;
- heavy metals (arsenic [As], cobalt [Co], copper [Cu], lead [Pb] and zinc [Zn]);
- cyanide (CN);
- inorganics (ammonia [NH₄⁺] and sulfate [SO₄²⁻]); and
- total recoverable hydrocarbons (TRH).

4 ASSESSMENT CRITERIA

The main report (Environmental Earth Sciences, 2013b) discusses in detail the assessment criteria adopted for the site and justification for selecting those criteria. Please refer to that document, if additional information is required.

Based on the total dissolved solids (TDS) concentrations determined to be representative of background conditions and in accordance with the State Environment Protection Policy, 1997, *Groundwaters of Victoria* (SEPP GoV), the groundwater beneath the site is classified as Segment A2. The beneficial uses to be protected under Segment A2 are:

- maintenance of ecosystems;
- potable water supply (acceptable);
- agriculture, parks and gardens;
- stock watering;
- industrial water use;
- primary contact recreation; and



buildings and structures.

The selected criteria to assess the beneficial uses are listed in Table 2.

TABLE 2 GROUNDWATER BENEFICIAL USES

Beneficial Use	Adopted Guideline Source
Maintenance of Ecosystems	ANZECC 2000 "Aquatic systems" guidelines for marine and freshwater species, Trigger values for 95% marine water. Also Hickey (2002) for nitrate criteria.
Acceptable Potable	National Health and Medical Research Council (NHMRC) <i>Guidelines for Managing Risks in Recreational Water</i> , 2008.
Water Supply	NHMRC National Water Quality Management Strategy, Australian Drinking Water Guidelines 6, 2011.
Agriculture, parks and gardens	ANZECC, 2000 "Primary Industries" guidelines for irrigation water quality.
Stock watering	ANZECC, 2000 "Primary Industries" guidelines for livestock drinking water quality.
Industrial Water Use	No specific guidelines as stated in ANZECC 2000.
Primary Contact Recreation	NHMRC Guidelines for Managing Risks In Recreational Waters, 2008.
Buildings and Structures	Australian Standard AS3600 – 2009 Concrete Structures.

In reference to Melbourne Water and South East Water specific obligations, groundwater concentrations at the site have been compared against South East Water '*Standards for trade waste discharge to the sewerage system*', presented in Environmental Earth Sciences 2013b report. Please note Melbourne Water standards for discharge could not be identified.

5 SITE INVESTIGATION

5.1 Summary of field activities

Thirty six wells were proposed to be sampled as part of this groundwater investigation, however during the groundwater investigation, GW27 could not be located and therefore was not sampled. The well was subsequently found by surveyors after the conclusion of the groundwater investigation. The supplementary groundwater investigation was undertaken between 24 and 27 June 2013.

At the start of the groundwater investigation, all groundwater wells were gauged, using an interface meter, to measure the standing water level (SWL) and are presented in **Table T1**. No light non-aqueous phase liquid (LNAPL) was identified during the gauging event.

The selected groundwater wells to be sampled were gauged and purged prior to sampling using a low flow (Micro-purge) sampling technique. Field parameters (dissolved oxygen, pH, conductivity, temperature and oxidation reduction potential) and SWL were recorded and



stabilised prior to sampling. Six groundwater wells that had shown to have poor recovery from past investigations, or had less than one metre of water column were bailed dry (with the use of a dedicated plastic bailer). Those bores were left to recover and sampled on the same day or within 24 hours. Two bores were found to be dry (GW3 and GW20). Groundwater sampling records are presented in **Appendix A**.

Samples were collected in the appropriate laboratory prepared bottles and labelled with the well number and date sampled before being placed in a darked cooler with ice. Groundwater collected for heavy metal analysis was field filtered while samples collected for cyanide analysis was pre-treated using laboratory supplied pre-treatment bottles.

The wastewater intermediate bulk container (IBC) was picked up from the site on 2 July 2013 and the waste transport certificates are presented in **Appendix B**.

All sampling procedures were undertaken in accordance with Environmental Earth Sciences, 2011, *Soil, gas & groundwater sampling manual* and EPA Publication 669, 2000, *Groundwater sampling guidelines*. Practices to eliminate cross contamination included the following:

- use of individual dedicated pump bladders, tubing and bailer (if necessary) at each groundwater well; and
- thorough washing of all re-used sampling equipment (including the pump, steel cable and interface meter) with detergent (Decon 90) water, then double rinsing with clean water and drying before each location.

5.2 Laboratory analysis

Groundwater samples were collected from 33 groundwater wells. All primary, rinsate and trip blank samples were analysed by Australian Laboratory Services (ALS) and all interlaboratory triplicate samples were analysed by Eurofins-MGT Laboratories, both of which are NATA accredited laboratories. Each sample was analysed for the following:

- ionic balance including pH, TDS, Ca²⁺, Mg²⁺, Na⁺, K⁺, NH₄⁺, Cl⁻, HCO₃⁻, SO₄²⁻, NO₃⁻, NO₂⁻, PO₄³⁻ and F⁻;
- dissolved heavy metals including Al, As, B, Cd, Co, Cr (VI), Cu, Fe, Hg, Pb, Mn, Ni, Se and Zn;
- total cyanide;
- TPHs and total recoverable hydrocarbons (TRH);
- monocyclic aromatic hydrocarbons (MAHs) including trimethylbenzene, benzene, toluene, ethylbenzene and xylene (BTEX), and
- naphthalene.

Those groundwater samples with elevated concentrations of TPH were re-analysed for the silica-gel clean up to remove any organics which are not associated with petroleum hydrocarbons.

Two duplicate and triplicate samples were collected during the groundwater investigation and analysed for all the above analysis except the ionic balance suite. Rinsate samples were collected each day (four samples in total) and were analysed for TPH, MAH and naphthalene. Trip blank samples (eight in total) were placed into each esky sent off to the laboratory and analysed for MAH and naphthalene only.



5.3 Field hydrogeological information

The hydrostratigraphy on site and in the vicinity of the site consists of Brighton Group sediments overlying the Older Volcanics. Groundwater flow through the full saturated thickness of the Brighton Group sediments is mostly controlled by deep sewers which border the site on three sides, i.e. Foote Street/Bridport Street to the south east, Graham Street to the south west and Pickles Street to the north west. The water table on site is drawn down several metres below its natural level by the sewers such that it is several metres below sea level throughout the area of the site and the surrounding vicinity, and the upper 7-8 m of the Brighton Group and overlying fill are generally unsaturated. The majority of the groundwater on site ultimately flows to the sewers beneath Foote Street/Bridport Street and Graham Street as they are deeper than the sewer beneath Pickles Street.

The horizontal hydraulic gradient over much of the site is in the range 0.007 to 0.02 (refer to Figure 4).

5.4 Groundwater Flow and aquifer yield estimates

Based on gauging data collected on 24 June 2013 groundwater elevation contours are shown in **Figure 4**.

The aquifer is considered to be heterogeneous in both the vertical and lateral directions due to lithological variations within the Brighton Group. Groundwater is likely to move preferentially through the most permeable layers.

The maximum linear velocity of the groundwater is estimated to be approximately 62 m/yr, based on the maximum hydraulic conductivity (K) of 1.7 m/day evaluated from slug tests (refer to Environmental Earth Sciences, 2013b), an effective porosity of 0.2 (Environmental Earth Sciences, 2013b) and a hydraulic gradient of 0.02 (maximum gradient). For the median hydraulic conductivity of 0.3 m/day calculated from the slug test results, the average linear velocity of the groundwater is estimated to be approximately 11 m/yr.

The groundwater flow system through the Brighton Group on site is interpreted to have the following additional characteristics:

- nearly all of the groundwater flow in the Brighton Group beneath the site has been recharged by infiltration from the ground surface on site;
- there is an upward gradient from the underlying Older Volcanics to the Brighton Group such that contaminated groundwater cannot migrate below the Brighton Group. Due to this gradient, there may also be some minor upward leakage into the Brighton Group flow system from the underlying Older Volcanics; however, this flux is considered to be small in comparison to the flux derived from on-site recharge;
- most of the groundwater discharging from the site is captured by the sewers with exception to the northern portion of the site (via Richardson Street Sewer), but eventually is expected to be captured by the adjacent sewers;
- lateral groundwater flow towards the sewers takes place through the full saturated thickness of the Brighton Group. However, the greatest lateral flux takes place through the layers of greatest K. Over most of the site, the saturated thickness of the Brighton Group is approximately 10 m;
- the oldest groundwater within the Brighton Group on site is likely to be closest to the sewers towards the down gradient end of the longest flow paths, within the relatively low K zones of the Brighton Group, and/or in areas of relatively low hydraulic gradient;

• the median K of the Brighton Group at the site was evaluated from slug tests to be approximately 0.3 m/day. K was observed to decrease with depth in the Brighton Group; and

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• the average linear velocity of the groundwater flowing laterally through the Brighton Group over most of the site is estimated to be approximately 11 m/yr.

5.5 Revalidation of Groundwater Flux to Sewers

The estimated groundwater flux to sewers based on the interpreted hydrogeological information for this round of groundwater sampling is as follows:

South Yarra main sewer

Assuming a saturated thickness of 9 metres, a sewer length over which discharge is taking place of 170 m, a hydraulic gradient of 0.02 and a hydraulic conductivity of 0.3 m/day, the groundwater discharge rate from the site to the South Yarra main sewer (along Bridport Street) was estimated to be 9.20 m³/day.

Hobsons Bay main sewer

Assuming a saturated thickness of 9 metres, a sewer length over which discharge is taking place of 140 m, a hydraulic gradient of 0.02 and a hydraulic conductivity of 0.3 m/day, the groundwater discharge rate from the site to the Hobson Bay main sewer (along Graham Street) was estimated to be 7.56 m³/day.

Pickles Street sewer

Assuming a saturated thickness of 9 metres, a sewer length over which discharge is taking place of 112 m, a hydraulic gradient of 0.007 and a hydraulic conductivity of 0.3 m/day, the groundwater discharge rate from the site to the Pickles Street sewer was estimated to be 2.12 m^3 /day.

Thus, the total discharge to the surrounding sewers from Gasworks Park and Southport Community Nursing Home is estimated to be 19 m³/day 7 ML/yr).

The flux estimates herein were calculated from observations of hydraulic properties and gradients within the Brighton Group sediments on site. Previous estimates by Golder were based on assumed sewer pipe hydraulic properties rather than on-site field measurements of Brighton Group properties. The updated estimate was higher than the previous estimated flux by Environmental Earth Sciences (Environmental Earth Sciences, 2013b). However, the calculated flux is orders of magnitude lower than the typical daily flow rate in the sewer (estimated to be 230ML/day by Golders report 2006) and therefore the daily discharge to sewers can be considered negligible.

5.6 Analytical data validation

Analytical data validation is the process of assessing whether data is in compliance with method requirements and project specifications. The primary objectives of this process are to ensure that data of known quality is reported, and to identify if the data can be used to fulfill the overall project objectives. The process involves the checking of analytical procedure compliance and assessment of the accuracy and precision of the analytical data from a range of quality control measurements, generated from both the sampling and analytical programs.



Specific parameters that were checked and assessed for this project included:

- collection of field duplicate and field split samples. The field duplicate samples were analysed by ALS (primary laboratory) and the triplicate samples were analysed by Eurofins-MGT (secondary laboratory);
- preservation and storage of samples upon collection and during transport to the laboratory;
- calibration of field equipment;
- correlation of field collected groundwater data (pH, EC, ORP, temperature) with laboratory analysis results (pH, TDS, NO₃/NH₃ concentrations);
- adherence to sample holding times;
- use of appropriate analytical procedures;
- review of limit of reporting;
- Iaboratory duplicates and calculation of relative percent differences (RPDs);
- laboratory blank results;
- matrix spike recovery results; and
- the occurrence of apparently unusual or anomalous results, e.g. laboratory results that appear to be inconsistent with field observations or measurements.

The QA/QC report is presented in **Appendix C**.

6 DISCUSSION OF RESULTS

The groundwater wells were sampled between 24 and 27 June 2013 and were analysed for CoPC as per section 5.2. Four equipment blanks, eight trip blanks and two duplicate and split samples were also collected for QAQC purposes. All samples were subjected to laboratory analysis, a summary of the groundwater laboratory results are presented in Tables **T2 toT5**. Laboratory transcripts and chain of custody forms are included in **Appendix D**.

6.1 Organic groundwater analysis

All organic laboratory groundwater results are presented in Tables **T2 to T4**. The majority of the reported organic compounds concentrations were below the adopted site criteria with the exception of:

6.1.1 Polycyclic Aromatic Hydrocarbons

• naphthalene concentrations of 134 μ g/L for NE well (GW38) and ranging between 572 and 6,470 μ g/L for OS wells (GW44D and GW24).



6.1.2 Monocyclic Aromatic Hydrocarbons

- benzene concentrations ranging between:
 - \circ 1 and 3,380 µg/L for OS wells (GW02, GW05, GW23, GW24, GW35, GW39, GW42D and GW44D);
 - \circ 15 and 269 µg/L for NE wells (GW08, GW37 and GW38); and
 - \circ 69 µg/L for NW well (GW32);
- ethylbenzene concentrations ranging between:
 - $_{\odot}$ $\,$ 36 and 52 $\mu g/L$ for OS wells (GW44D and GW23); and
 - \circ 15 µg/L for NE well (GW38);
- xylenes concentrations for OS wells ranging from 27 μg/L (GW42D) to 1,635 μg/L (GW24).

6.1.3 Total Petroleum Hydrocarbons

- TPHC₆-C₉ concentrations ranging between:
 - \circ 200 and 5,110 µg/L for OS wells (GW23, GW24, GW42D and GW44D); and
 - \circ 530 µg/L for NE well (GW38);
- TPHC₁₀-C₃₆ concentrations ranging between:
 - \circ 810 and 116,000 $\mu g/L$ for OS wells (GW02, GW05, GW19, GW23, GW24, GW39, GW42D and GW44D); and
 - ο 1,160 and 11,900 μg/L for NE wells (GW08, GW37 and GW38).

Silica gel clean up and re-analysis was undertaken on a number of samples for TPH fraction C_{10} - C_{36} . The results of this analysis indicated that approximately 16.5% to 100% of previously identified TPH compounds across the analysed samples were confirmed to be from primarily natural organic influences such as humic and fulvic acids rather than attributed to true petroleum hydrocarbons.

Therefore after silica gel clean-up only the following wells exceeded adopted ecological and health criteria (600 μ g/L):

- OS wells GW23 (650 μg/L), GW24 (12,600 μg/L) and GW44D (58,100 μg/L); and
- NE well GW38 (9,100 µg/L).

As discussed in the main groundwater report (Environmental Earth Sciences 2013b), these detections were considered to be aromatic hydrocarbons only, which is consistent with the PAH and BTEX concentrations reported for these samples. This indicates that TPH detected onsite consists predominantly of BTEX and PAHs compounds. Therefore TPHs as a CoPC are of lesser concern on this site as they are assessed separately under their more toxic constituents.

These elevated TPH concentrations are comparable with the groundwater results reported in the main groundwater report (Environmental Earth Sciences 2013b).



6.2 Inorganic groundwater analysis

All inorganic laboratory groundwater results are presented in Tables T2 to T4. The majority of the reported inorganic compounds concentrations were below the adopted site criteria with the exception of:

6.2.1 Heavy metals

- Aluminium concentration of 0.45 mg/L for OS well GW42D;
- Arsenic concentrations ranging between:
 - o 0.003 and 2.06 mg/L for all OS wells;
 - o 0.017 and 1.45 mg/L for most NW wells except for GW06;
 - o 0.011 and 0.034 mg/L for most SE wells except for GW15; and
 - 0.065 and 0.365 mg/L for most NE wells except for GW29.
- Boron concentrations ranging between:
 - o 0.60 and 3.03 mg/L for most OS wells except for GW42D;
 - o 0.99 and 8.25 mg/L for all NW wells;
 - 0.62 and 1.51 mg/L for most SE wells except for GW10; and
 - o 0.53 and 0.95 mg/L for most NE wells except for GW26.
- Cobalt concentrations ranging between:
 - o 0.002 and 7.79 mg/L for all OS wells;
 - o 0.002 and 0.015 mg/L for most NW wells except for GW06 and GW32;
 - o 0.002 and 0.01 mg/L for most SE wells except for GW09; and
 - o 0.004 and 0.034 mg/L for most NE wells except for GW28.
- Copper concentrations ranging between:
 - o 0.002 and 0.065 mg/L for most OS wells except for GW05, GW23 and GW31;
 - 0.002 and 0.006 mg/L for all NW wells;
 - o 0.002 and 0.003 mg/L for all SE wells; and
 - o 0.002 and 0.004 mg/L for most NE wells except for GW28 and GW38.
- Iron concentrations ranging between:
 - 0.24 and 49.40 mg/L for most OS wells except for GW18, GW22, GW24 and GW41;
 - o 0.49 and 2.33 mg/L for three NW wells (GW32, GW34 and GW36);
 - o 0.33 and 0.96 mg/L for two SE wells (GW10 and GW25); and
 - 0.71 and 36.30 mg/L for most NE wells except for GW29.
- Magnesium concentrations in OS deep wells GW18 (727 mg/L), GW42D (1,060 mg/L) and GW43D (638 mg/L).
- Manganese concentrations ranging between:
 - 1.32 to 3.64 mg/L for three NE wells (GW08, GW26 and GW38); and
 - 0.741 and 24.6 mg/L for 10 OS wells (GW02, GW05, GW18, GW19, GW35, GW39, GW40, GW42D, GW43 and GW44).



- Nickel concentrations ranging between:
 - 0.04 and 2.20 mg/L for 10 OS wells (GW01, GW05, GW19, GW22, GW31, GW39, GW40, GW42D, GW43 and GW44);
 - o 0.025 and .074 mg/L for all NW wells;
 - o 0.036 and 0.066 mg/L for all SE wells; and
 - o 0.028 and 0.1 mg/L for five NE wells (GW07, GW08, GW26 GW29 and GW30).
- Selenium concentrations ranging between:
 - o 0.004 mg/L for NE well GW28;
 - o 0.01 mg/L for two OS wells (GW42D and GW44); and
 - It should be noted that the laboratory LOR are higher than the adopted criteria ANZECC 2000.
- Zinc concentrations ranging between:
 - 0.021 and 0.143 mg/L for most OS wells except for GW18, GW23, GW24 and GW35;
 - 0.018 and 0.035 mg/L for most NW wells except for GW34;
 - o 0.031 and0 .067 mg/L for all SE wells; and
 - 0.02 and 0.137 mg/L for six NE wells (GW07, GW08, GW26, GW29, GW30 and GW37).
- Lead concentration of 0.011 mg/L for NW well GW32.

6.2.2 Other Inorganics

- Ammonia concentrations ranging between:
 - o 0.350 and 2,410 mg/L for most OS wells except for GW40;
 - o 0.67 mg/L for SE well GW15;
 - o 0.42 and 16.30 mg/L for most NW wells except for GW36; and
 - 1.29 and 1,150 mg/L for most NE wells except for GW29 and GW30.
- Chloride concentrations ranging between:
 - 816 and 9,670 mg/L for 11 OS wells (GW01, GW02, GW18, GW19, GW31, GW35, GW40, GW41, GW42D, GW43 and GW44); and
 - 302 and 1,000 mg/L for most NE wells except for GW08 and GW38.
- Total Cyanide concentrations ranging between:
 - 0.015 and 0.212 mg/L for most OS wells except for GW40 and GW43;
 - o 0.005 and 0.255 mg/L for all NW wells; and
 - o 0.016 and 0.16 mg/L for most NE wells except for GW26, GW29 and GW30.
- Fluoride concentrations ranging between:
 - \circ 1.4 and 4.5 mg/L for six OS wells (GW01, GW05, GW31, GW35, GW39 and GW41);
 - o 1.4 and 2.5 mg/L for all NW wells; and
 - o 1.3 and 2 mg/L for four NE wells (GW07, GW28, GW30 and GW37).

- Total dissolved solids concentrations ranging between:
 - o 596 and 27,000 mg/L for all OS wells;
 - o 936 and 6,390 mg/L for all NW wells;
 - o 520 and 680 mg/L for all SE wells; and
 - 1,180 and 3,440 mg/L for all NE wells.
- Nitrate concentrations of:
 - o 128.47 mg/L for OS well GW24;
 - 115.62 mg/L for SE well GW09; and
 - o 71.32 mg/L for NE well GW29.
- Sulfate concentrations ranging between:
 - o 178 mg/L to 6,950 mg/L for all OS wells;
 - o 184 mg/L to 2,070 mg/L for all NE wells;
 - o 158 mg/L to 314 mg/L for most SE wells except for monitoring well GW09; and
 - 206 mg/L to 2,430 mg/L for most NW wells except for monitoring well GW06.
- pH measurements ranging between:
 - 5.57 and 6.48 pH units for six OS wells (GW05, GW19, GW40, GW42D, GW43 and GW44);
 - o 3.66 and 6.49 pH units for all SE wells, and
 - o 5.82 and 5.96 pH units for two NE wells (GW08 and GW30).

7 HYDROGEOCHEMISTRY

The geochemistry of the groundwater samples collected in June 2013 is generally the same as compared with the groundwater samples collected in 2011 by Environmental Earth Sciences (Environmental Earth Sciences 2013b).

Chart 1 and Chart 2 present Schoeller Plots of the shallow Brighton Group groundwater chemistry and the deep Brighton Group groundwater chemistry respectively. Based on the results presented in Tables **T2-T5** and Charts 1 and 2, the groundwater across the site can be characterised in terms of chemistry and geo-chemical evolution.

It should also be noted that based on the reported TDS results which were higher within those wells located adjacent to sewers, suggesting that the seawater from the Bay was potentially migrating along the sewers and causing very high TDS values.

7.1 Shallow groundwater wells

Groundwater pH within shallow wells across the site and surrounds is relatively neutral, with an average field pH of 6.6 (June 2013 GME) and comparatively the same as the previous 2011 GME with an average of 6.8.

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Mean TDS concentrations were approximately 4,450 mg/L in shallow OS wells, 2,200 mg/L in NE wells, 3,253 mg/L in NW wells, and 581 mg/L in SE wells.

South-East (SE) wells (i.e. GW9, GW10, GW15 and GW25) are characterised by low concentrations of TDS ranging from 520 to 620 mg/L and generally dominated by Na-SO₄ (HCO₃) with Mg–Cl (HCO₃) sub-dominant. Localised proportionally elevated concentrations of nitrate (NO₃) are also consistent with influences from urban activities. These conditions are considered to be background conditions of the local region and correspond with the expected groundwater segment and associated beneficial uses.

North-West (NW) wells (i.e. GW6, GW32, GW33, GW34 and GW36) have TDS concentrations ranging from 936 to 6,390 mg/L where the higher TDS concentrations were noted within vicinity of the corner of Pickles Street and Richardson Streets sewers. The NW groundwater was generally dominated with Na-CI to Ca- SO_4 with the exception of GW32 where a higher bicarbonate and lower TDS were noted suggesting a recent recharge.

Note that it may be possible for relatively high salinity and alkalinity water to migrate laterally to some extent via preferential pathways along sewer lines that are below sea level especially to those well located within the vicinity of these sewers.

Based on the inferred groundwater flow directions, the impacts in the NW wells are likely to be from site, off-site or a combination of both. The groundwater impact to monitoring wells GW33 and GW32 could be either background concentrations or be coming from an off-site source due to the presence of the Pickles Street Sewer preventing flow across Pickles Street. On the other hand, in monitoring wells GW06, GW34 and GW36, there is a potential that the groundwater impacts within these wells could be from an onsite source or could be an off-site source (Richardson Street Sewer).

North-East (NE) wells (GW7, GW8, GW26, GW27, GW28, GW29, GW30, GW37 and GW38) have TDS concentrations ranging from 1,180 to 2,560 mg/L and a considerable range in the dominant ions. Based on the inferred groundwater flow direction as interpreted in Figure 4, it is possible that these wells have been impacted by contaminated groundwater migrating from the site.

On-Site (OS) wells (i.e. GW1, GW2, GW5, GW18, GW19, GW22, GW23, GW24, GW31, GW35, GW39, GW40 and GW41) have a broad range of TDS concentrations from 596 to 15,600 mg/L. There is a broad range of water types among the OS wells from Na-Cl dominated to Ca- SO_4 dominated. This is likely to reflect a range of temporal and spatial impacts at the site, as well as different rates of recharge at different locations since the decommissioning of the gasworks.

Overall, there is a broad range of water types among the OS wells from Na-CI dominated to Ca- SO_4 dominated. This is likely to reflect a range of temporal and spatial impacts at the site, as well as different rates of recharge at different locations since the decommissioning of the gasworks. The wells with the lowest TDS (e.g. GW22 and GW40) also have a relatively high proportion of HCO₃, which is likely to reflect recent recharge. In addition, it should also be noted that based on the reported TDS results higher within those wells located adjacent to sewers, this suggests that the seawater from the Bay was potentially migrating along the sewers and causing very high TDS values.



7.2 Deeper OS groundwater wells

Groundwater within deeper OS Brighton Group wells is slightly acidic, with an average field pH of 6.0. The TDS concentration within the three deeper groundwater wells ranged from 9,310 to 27,000 mg/L, with an average TDS of 14,728 mg/L. The TDS concentrations in the deeper OS wells are all greater than the TDS concentration in any shallow well.

Chart 2 presents the geochemical signatures found within deeper groundwater wells and also includes the geochemical signatures of seawater and rainwater for comparison. The geochemistry signature at most of the deeper wells GW43D (Na-CI>Mg-SO₄) is generally similar to that of seawater, apart from elevated NH_4^+ .

Note that it may be possible for relatively high salinity and alkalinity water to migrate laterally to some extent via preferential pathways along sewer lines that are below sea level especially to those well located within the vicinity of these sewers.









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8 INFERRED GROUNDWATER CHANGES ASSESSMENT

The inferred changes from groundwater analysis of previous monitoring events and current groundwater results have been presented within **Table T6**.

In general, the groundwater contamination conditions onsite and off-site are relatively stable (with slight increase or decrease) with some rise of contaminant concentrations (above background concentrations) within the NW and NE Wells but the long term trend of chemicals of concern were generally stable over the years and the dissolved contaminant plume is considered to be stable. In addition, as there are no known extraction wells used for groundwater Segment A2 beneficial uses located within the vicinity of NW and NE wells, the increase of contaminants of concern in some locations within the adjacent residential properties can be considered unlikely to pose un-acceptable risks to adjacent users.

The comparison of historical and current concentrations has been presented in Table T6.

8.1 OS Wells

The reported concentrations within the OS Wells are relatively stable (with slight increase/ decrease in concentrations). Concentrations of all chemicals in groundwater have deceased since 2011 with the exception of (more than two times higher than the baseline results for most of the chemicals except for heavy metals and one order of magnitude higher than the baseline results for heavy metals):

- increased NH₃ concentrations were found in GW2, GW3, GW4, GW24 and GW41;
- increased NO₂⁻ concentration was found in GW24;
- increased NO₃ concentration was found in GW4 and GW40;
- increased TDS concentrations were found in GW40 and GW41;
- increased CI concentrations were found in GW3, GW18, GW19, GW31, GW40, GW41and GW44;
- increased Na concentrations were found in GW4, GW18, GW19, GW40 and GW41;
- increased Ca concentrations were found in GW40;
- increased As concentrations were found in GW1, GW19, GW21, GW23, GW24, GW31, GW35 and GW39;
- increased Cu concentration was found in GW40;
- increased Fe concentrations were found in GW1, GW31 and GW35;
- increased Mn concentrations were found in GW18;
- increased Zn concentrations were found in GW40;
- increased benzene concentrations were found in GW5 and GW39;
- increased naphthalene concentration was found in GW24;
- increased TPH C₁₀-C₁₄ concentration was found in GW2;
- increased TPH C_{10} - C_{16} were found in GW19 and GW41;



- increased TPH C₁₅-C₂₈ concentrations were found in GW2, GW3, GW4 GW19 and GW35;
- increased TPH C₂₉-C₃₆ concentrations were found in GW4; and
- increased TPH C₁₀-C₃₆ concentrations were found in GW2, GW3, GW4 and GW19.

The increase of chemical concentrations in some locations in the OS Wells can be considered to be a combination of ongoing impacts migrating from the site, off-site source/s and background concentrations. The greatest increase of potential gasworks related contaminants of concern [NH₃ and/or TPH(C₁₀-C₃₆)] were observed at GW2, GW3 (based on data up to 2011 only), GW4, GW18, GW19, GW24 and GW41 which is consistent with the inferred radial groundwater flow directions. It can be considered that these dissolved chemicals will be captured by the adjacent sewers.

The majority of the heavy metal concentrations in deeper OS Well GW42D remained significantly higher as compared with the other OS shallow and deep wells. However, it should be noted that the heavy metal results were either stable or had decreased (particularly OS well GW42D with Al from 3.91 mg/L to 0.45 mg/L, Zn from 2.2mg/L to 0.143 mg/L and Mn from 120mg/L to 24.6mg/L) as compared with the previous round of sampling. As these elevated heavy metals were not observed in the majority of the shallow and deep OS wells, it can be considered likely that this was not a result of the historical use of the site.

8.2 NW Wells

The reported concentrations within the NW Wells are relatively stable (with slight increase/ decrease in concentrations). Concentrations of all chemicals in groundwater have deceased since 2011 with the exception of (more than two times higher than the baseline results for most of the chemicals except for heavy metals and one order of magnitude higher than the baseline results for heavy metals):

- increased NH₃ concentration was found at GW34;
- increased NO₃ concentration was found in GW34;
- increased CI concentrations were found in GW33;
- increased As concentrations were found in GW32, GW34 and GW36;
- increased Fe concentrations were found in GW32 and GW34;
- increased benzene and ethylbenzene concentrations were found in GW32;
- increased fluoride concentrations were found in GW34;
- increased TPH C₆-C₉ concentration was found in GW32;
- increased TRH C₁₆-C₃₄ concentration was found in GW32;
- increased TPH C₁₅-C₂₈ concentrations was found in GW32, and
- increased TPH C_{10} - C_{36} concentrations were found in GW32.

Based on the inferred groundwater flow directions, the increase in potential gasworks related contaminants of concern [NH₃ and/or TPH (C_{10} - C_{36})] concentrations in some locations in the NW Wells can be considered to be a combination of onsite and off-site sources (GW34 and GW36).



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It is noted that the majority of the heavy metals results were reported higher than the previous round of sampling (2011). The increase or decrease of heavy metals cannot be compared accurately due to the difference in filtering methods undertaken (field vs lab filtered).

8.3 NE Wells

The reported concentrations within the NE wells are relatively stable (with slight increase/ decrease in concentrations). Concentrations of all chemicals in groundwater have deceased since 2011 with the exception of (more than two times higher than the baseline results for most of the chemicals except for heavy metals and one order of magnitude higher than the baseline results for heavy metals):

- increased NH₃ concentrations were found in GW8, GW26, GW28;
- increased NO₃ concentration was found in GW27;
- increased As concentrations were found in GW26, GW28;
- increased Fe concentrations were found in GW08, GW26, GW28, GW30 and GW38;
- increased BTEX concentration was found in GW38;
- increased trimethylbenzene concentration was found in GW38;
- increased naphthalene and TPH C₆-C₉, TPH C₁₀-C₁₆ concentrations were found in GW38;
- increased TPH C₁₀-C₁₄ concentrations were found in GW38;
- increased TPH C₁₆-C₃₄ concentrations were found in GW07;
- increased TPH C₂₉-C₃₆ concentrations were found in GW27; and
- increased TPH C_{15} - C_{28} and TPH C_{10} - C_{36} concentrations were found in GW27 and GW28.

Based on the inferred groundwater flow directions, the increase in chemical concentrations at some locations in the NE Wells can be considered to be a combination of impacts migrating from the site and other off-site sources. The greatest increase was observed at GW38, which is consistent with the inferred flow direction, however it can be assumed that the plume will eventually be captured by South Yarra Sewer Main.

8.4 SE Wells

The reported concentrations within the SE wells are relatively stable (with slight increase/ decrease in concentrations). Concentrations of all chemicals in groundwater have deceased since 2011 with the exception of (more than two times higher than the baseline results for most of the chemicals except for heavy metals and one order of magnitude higher than the baseline results for heavy metals):

- increased NO₃ concentrations were found in GW12;
- increased CI concentrations were found in GW13 and GW14;



- increased Ca concentration were found in GW25;
- increased As concentrations were found in GW25;
- increased Fe concentrations were found in GW10; and
- increased TPH C₁₅-C₂₈, TPH C₂₉-C₃₆, TPH C₁₀-C₃₆ concentrations were found in GW11 (based on 2011 data only).

Based on the inferred groundwater flow directions and the presence of South Yarra Sewer Main, the increase of chemical concentrations in some locations in the SE Wells is not considered to be as a result of the impacts coming from the former gasworks. The concentrations detected could be considered as background concentrations, or as a result of an off-site source.

9 GROUNDWATER BENEFICIAL USES

The watertable beneath the site is within the Brighton Group sediments. Groundwater onsite within the Brighton Group aquifer has been classified according to the State Environment Protection Policy (SEPP) 1997, *Groundwaters of Victoria (GoV)* publication (SEPP *GoV*), using the laboratory TDS levels reported for the June 2013 groundwater investigations. Groundwater encountered beneath the site ranges between Segment A and Segment D. As displayed in Table 2, most TDS results classified groundwater as Segment B. However in reference to the SEPP, groundwater should be assessed in comparison with the most sensitive beneficial uses (i.e. Segment A2), i.e.:

- maintenance of ecosystems;
- potable water supply (acceptable);
- potable mineral water;
- agriculture, parks and gardens (irrigation);
- stock watering;
- industrial water use;
- primary contact recreation; and
- buildings and structures.

As Gasworks Park and Southport are owned by the CoPP and the State of Victoria, extraction of groundwater onsite can be effectively controlled through management, should any of these beneficial uses be precluded. By preventing the use of groundwater on the site, the risks associated with this exposure pathway will be reduced to an acceptable level.

9.1 Maintenance of ecosystems

The following water quality indicators exceeded ecological based criteria:

- CN;
- NH₃;
- heavy metals: As, Co, Cu, Pb, Ni, Se and Zn;
- naphthalene;



- benzene, toluene and ethyl benzene; and
- TPH (C_6 - C_9 and C_{10} - C_{36}).

The protection and maintenance of ecosystems was a potential beneficial use of all groundwater in the Brighton Group sediments beneath the site. The nearest significant ecological receptors are the waters and sediments of Port Philip Bay, 350 m south-west of the site. Although this beneficial use is considered to be precluded, this can be considered unlikely to be realised given the distance to the nearest body of water and as most (or all) groundwater discharging from the site is captured by the sewers (based on the inferred groundwater flow directions).

If the sewers were to be removed in the future then there is potential for this pathway to be realised. However, even if all the sewers in South Melbourne were sealed such that the natural groundwater flow system to Port Phillip Bay were restored, the hydraulic gradient towards the Bay would be so low that the groundwater would move towards the Bay at a rate that is at least an order of magnitude less than the current rate of groundwater flow towards the sewers and the travel time would likely be thousands of years.

9.2 Potable water supply (acceptable)

The following water quality indicators exceeded potable water supply criteria (ADWG2011):

- pH (aesthetics only);
- TDS (aesthetics only);
- SO₄²⁻;
- CI (aesthetics only);
- CN;
- fluoride;
- nitrate;
- heavy metals: Al, As, Bo, Mn, Ni, Pb and Se; and
- benzene, xylenes and TPH (C_6 - C_9 and C_{10} - C_{36}).

The search of the groundwater database (refer to Environmental Earth Sciences 2013b) indicated that nine wells located within 1 km; 13 wells located with 1-2 km; and 8 wells located with 2-3 km radius of the site are registered for stock and/or domestic usage. Groundwater wells installed for this purpose were between 3 – 32 metres in depth within sand, Older Volcanics basalt (>17 m BGL), and sand/marl geological units.

Although this beneficial use is considered to be precluded, given the urban setting of the site, the fact that all groundwater discharging from the site is captured via the surrounding sewer network, the availability of reticulated mains water and the low yield of groundwater, it is considered unlikely that groundwater will be extracted for this use. However, despite the low likelihood of the use of the groundwater for potable water supply, this potential beneficial use cannot be completely discounted.



9.3 Potable mineral water supply

As the Albert Park area and the Brighton Group aquifer are not sources of mineral water supply. Therefore, this beneficial use is not relevant and does not require protection in the future.

9.4 Agriculture, parks and gardens

Irrigation is a potential beneficial use based on the TDS and major ions concentrations in the SE (background) wells. However, to the north and west of the site, in areas considered to be outside of the potential impact area of the site, the TDS is above 2,500 mg/L in most of the groundwater wells and is above 3,500 mg/L in several of the wells.

Although this protected beneficial use is considered to be precluded, the likelihood of extraction of groundwater from the Brighton Group for irrigation purposes is considered to be extremely low due to:

- the residential urban setting surrounding the site;
- the low yield of the Brighton Group aquifer; and
- the availability of reticulated water in the area (for domestic irrigation use).

However, despite the low likelihood of use of the groundwater for irrigation purposes, this protected beneficial use cannot be completely discounted.

9.5 Stock watering

The search of the groundwater database (refer to Environmental Earth Sciences, 2013b) indicated that 9 wells located within 1 km; 13 wells located with 1-2 km; and 8 wells located with 2-3 km radius of the site are registered for stock and/or domestic usage. Groundwater wells installed for this purpose were between 3 - 32 metres in depth within sand, Older Volcanics basalt (>17 m BGL), and sand/marl geological units.

Naturally occurring TDS concentrations exceeded the livestock watering guideline (3,000 mg/L) in 11 onsite, and four off site wells. Concentrations of certain metals and major ions exceeded stock water criteria at some locations.

Given the urban setting of the site, the fact that all groundwater discharging from the site is captured via the surrounding sewer network, the availability of reticulated mains water and the low groundwater yield, it can be considered that the likelihood of use of the groundwater is low. However, despite the low likelihood of use of the groundwater for stock/ domestic purposes, this potential beneficial use cannot be discounted in this area.

9.6 Industrial water use

All groundwater beneath the site needs to consider industrial application as a potential beneficial use. As water quality indicators for industrial use are very specific, complete assessment of all potential uses is beyond the scope of this study. However, it can be generally stated that natural TDS (as specified in the SEPP GoV (1997)) and CoPC concentrations exceed acceptable thresholds for industrial applications of this water.



Although the protected industrial water use is considered to be precluded, the likelihood of extraction of groundwater for industrial use is considered to be extremely low due to:

- the site setting and adjacent properties are not used for industrial;
- the yield of the aquifer is unlikely to be sufficient for such purposes as industrial processes usually require reasonably large volumes of water; and
- no groundwater wells exist for this use or are registered within 3 km of the surrounding area and given the low yield and elevated salinity in areas of local groundwater it is unlikely that such use exists.

However, despite the low likelihood of use of the groundwater for industrial purposes, this protected beneficial use cannot be completely discounted.

9.7 Primary contact recreation

Primary contact recreation is a potential beneficial use for all groundwater beneath the site. However, as the site is located within a highly urbanised area serviced by reticulated water, the yield of the Brighton Group is low, and discharge of most groundwater from Gasworks Park Precinct is to the Melbourne Water Sewer System, the likelihood of the use of groundwater migrating from Gasworks Park for recreational use is considered to be low.

Notwithstanding the low likelihood, Environmental Earth Sciences VIC investigated the number of residential swimming pools within 600 metres of the site from aerial photographs. A total of 27 outdoor swimming pools were identified (refer to Environmental Earth Sciences, 2013b). All pools are considered to be outside the area of groundwater contamination associated with the Gasworks Park precinct (i.e. beyond sewers), with the exception of the following two locations:

- 7 Richardson Street, Port Melbourne 50 m north; and
- 266 Bridport Street, Port Melbourne 80 m north-east.

The property located at 7 Richardson Street is up-gradient from the site, however, 266 Bridport Street is down-gradient from the site and in an area of elevated NH_4^+ and SO_4^{2-} concentrations in the groundwater. Review of the DSE '*Groundwater Database*' indicated no groundwater wells within a 3 km radius of the site are registered for extraction and no wells are registered for any uses at the above location. Therefore, it can be concluded that the swimming pools at the above addresses are filled from sources other than local groundwater.

Considering the availability of reticulated mains water and the low yield of the Brighton Group, it is unlikely that an extraction well would be drilled for the purpose of filling a swimming pool. However, this potential beneficial use cannot be discounted in this area.

9.8 Buildings and structures

Buildings and structures is a potential beneficial use for all groundwater beneath the site. The depth to groundwater across the site is between 6 and 10 mbgl and groundwater levels are predominantly drawn down by the sewers. Therefore, footings and foundations are unlikely to come into contact with the groundwater unless they extend to more than 6 mbgl.



In addition, based on the relatively neutral pH (average 6.5 for both shallow and deep wells), and average sulfate concentration of 1,446 mg/L, groundwater beneath the site is considered to be non aggressive based on Australian Standard *Concrete Structures* AS 3600-2009 and *Piling – Design and Installation* AS 2159-2009.

Buildings and structures is not considered to be a precluded beneficial use.

9.9 Trade waste agreement

As part of the specific obligations, Melbourne Water noted that it accept would groundwater provided that it "*maintain the right acting reasonably, not to accept the groundwater if it is found to interfere with the operation or maintenance of its assets or <u>does not comply with trade waste requirements</u> or safety requirements imposed by the Victorian Government from time to time".*

In reference to Melbourne Water specific obligations, groundwater concentrations at the site have been compared with South East Water '*Standards for trade waste discharge to the sewerage system*'.

Concentrations that exceeded the maximum allowable value for discharge to the sewerage system include:

- pH in three OS wells (GW40, GW42D and GW43), two NE wells (GW08 and GW30), and one SE well (GW10);
- SO₄²⁻ in all OS wells, most NW wells except GW6, all NE wells and most SE wells except GW9;
- NH₃ in six OS wells (GW02, GW05, GW24, GW39, GW42D and GW44) and three NE wells (GW8, GW37 and GW38);
- As in two OS wells (GW19 and GW35) and two NW wells (GW32 and GW34);
- Mn in three OS wells (GW19, GW42D and GW44D);
- Fe in one OS well (GW19); and
- benzene and TPH fraction C_6 - C_9 in two OS wells (GW24 and GW44D).

Please note these standards are discharge of waste from land to the sewer and were not intended to address groundwater discharging directly to sewers.



10 CONCLUSION

Environmental Earth Sciences VIC was requested by CoPP to undertake a groundwater investigation at the property located in Albert Park and is bounded by Graham Street to the south; Pickles Street to the west; Richardson Street to the north; and Foote Street/Bridport Street to the east.

10.1 Groundwater contamination

10.1.1 Onsite Groundwater Impacts

Elevated organic and inorganic results were identified at the time of this groundwater assessment which exceeded the adopted criteria for groundwater classified as Segment A2 and these include: MAH's, naphthalene, TPH, selected inorganics such as heavy metals, chloride, ammonia, sulfate, cyanide, total dissolved solids, nitrate and pH. However, there is no evidence of either DNAPL or LNAPL existing onsite.

The relatively low contaminant concentrations towards the centre of the site in comparison to the site perimeter could be due to less contamination originating from the central part of the site but may also reflect some flushing of the on-site flow system with less contaminated recharge since the site ceased to operate as a gasworks in 1971.

Although all the groundwater beneficial uses are precluded on-site, these are not considered to be relevant as the site is currently occupied as public open space and no extraction bores were installed for any beneficial uses including recreational purposes. 'Recreational' includes filling up of pools/spas or outdoor water features including ponds. In addition, the site does not have on-site ecological groundwater receptors such as an aquatic ecosystem.

In addition, groundwater from the site does not support any ecosystem as most (or all) groundwater discharging from the site is captured by the sewers (based on the inferred groundwater flow directions – see Figure 4).

10.1.2 Off-site Groundwater Impacts

Elevated organic and inorganic results were identified at the time of this assessment which exceeded the adopted criteria for groundwater classified as Segment A2 (maintenance of ecosystem, potable water supply, irrigation, stock watering, industrial water use and primary contact recreation). These include: MAH's, naphthalene, TPH, and selected inorganics such as heavy metals, chloride, ammonia, sulfate, cyanide, total dissolved solids, nitrate and pH. However, there is no evidence of either DNAPL or LNAPL existing onsite.

The gasworks site is considered likely to be the main source in this area of groundwater contamination. This is especially the case in the NE wells and some of the NW wells (GW34, GW36 and GW06 off-site groundwater impacts). However, it should be noted that some impacts could also be coming from other off-site sources.

The nearest significant ecological receptors are the waters and sediments of Port Phillip Bay, 350 m south-west of the site. Due to the fact that all groundwater from the Gasworks Park Precinct discharges to the Melbourne Water Sewer System (refer to Environmental Earth Sciences, 2013b), all contaminants being transported in groundwater from the site are captured by the sewer system, and ultimately discharge to the Werribee Treatment Plant. As such, there is negligible risk of impacted groundwater from Gasworks Park discharging to receiving waters (i.e. ecosystems) in the vicinity of the site. However, off-site ecosystems



ENVIRONMENTAL EARTH SCIENCES

Although all groundwater beneficial uses for extraction purposes are precluded off-site, these are not considered to be relevant as there is no extraction bore installed for any beneficial uses including recreational purposes adjacent of the site 'Recreational' includes filling up of pools/spas or outdoor water features including ponds. However, consideration should be given to the north and north-eastern residential properties.

Given the urban setting of the site, the fact that all groundwater discharging from the site is captured via the surrounding sewer network, the availability of reticulated mains water and low groundwater yield it is considered highly unlikely that groundwater will be extracted for any of the beneficial uses under Segment A2. However, despite the low likelihood of use of the groundwater for any protected beneficial uses under Segment A2, these potential beneficial uses cannot be discounted in this area.

10.2 Groundwater Inferred Changes Assessment

In general, the groundwater contamination conditions onsite and off-site are relatively stable (with slight increase or decrease) with some rise of potential gasworks related contaminants of concern [NH₃ and/or TPH (C_{10} - C_{36})] above background and historical concentrations within the NW and NE Wells. Despite this, the long term trend of chemicals of concern is generally stable and hence the dissolved contaminant plumes identified are considered to be stable. In addition, as there are no known extraction wells used for groundwater Segment A2 beneficial uses located within the vicinity of NW and NE wells, the increase of contaminants of concern in some locations within the adjacent residential properties can be considered unlikely to pose un-acceptable risks to adjacent users. Refer to Section 8 for further discussion.

10.3 Trade waste agreement

A 'Deed of Agreement Groundwater and Gasworks Arts Park, Albert Park' exists between CoPP, Melbourne Water and South East Water. This 'Deed of Agreement' states that Melbourne Water and South East Water acknowledge that groundwater from the Gasworks Site enters the South Yarra Main and Hobsons Bay Main and the Pickles Street Branch Sewer respectively, and that these mains and sewer act as a control for groundwater. Both have agreed to accept groundwater that enters the Gasworks Site into the mains and sewer, provided that they maintain the right, acting reasonably, not to accept the groundwater if it is found to interfere with the operation or maintenance of its assets.

Assessment of groundwater samples collected during the June 2013 investigation compared against South East Water '*Standards for trade waste discharge to the sewerage system* indicated a number of dissolved chemicals exceed maximum allowable concentrations and/or values for discharge to the sewerage system.



10.4 Risks associated with the groundwater contamination

As all the groundwater flowing from the site is captured by the sewer system, it is ultimately pumped to the Werribee Treatment Plant. The flux of groundwater from the site is several orders of magnitude less the total flow rate of sewage through the sewers to the Werribee Treatment Plant. Therefore, although several dissolved chemicals exceed the criteria for discharge to a sewerage system, contaminant concentrations are diluted by several orders of magnitude. Therefore, associated risks to workers at the treatment plant would be very low. Furthermore, the personal protective equipment routinely used by workers working on the sewers themselves would protect them from any additional contaminants introduced into the sewers from the site.

As stated above, the capture of the groundwater by the sewers also means that there is negligible risk to ecosystems. Even if all the sewers in South Melbourne were sealed such that the natural groundwater flow system to Port Phillip Bay were restored, the hydraulic gradient towards the Bay would be so low that the groundwater would move towards the Bay at a rate that is at least an order of magnitude less than the current rate of groundwater flow towards the sewers and the travel time would likely be thousands of years. The volumetric rate of discharge to the Bay would, therefore, be very low when the contaminants ultimately reached the Bay.

In the impacted area to the north and north east of the site, the risks associated with it are considered to be negligible *in-situ*. Any potential risks related to the contamination would be associated with the extraction of the groundwater. Although it is considered unlikely that the local residents would extract groundwater in this area, there is potential for groundwater extraction to take place.

As Gasworks Park and Southport are owned by the CoPP and the State of Victoria, the extraction of groundwater onsite can be effectively controlled through management to prevent the use of groundwater on the site to reduce the risks associated with this pathway to an acceptable level.

11 RECOMMENDATIONS

Based on the above discussion, Environmental Earth Sciences is of the opinion that the most effective and practical way of managing groundwater impacts at the site is to implement a regular groundwater monitoring (monitored natural attenuation) program via a Groundwater Quality Management Plan (refer to Remediation Action Plan Report, Environmental Earth Sciences 2013c).

It should be noted that there is also a possibility that a Groundwater Quality Restricted Use Zone (GQRUZ) will be identified by EPA.



12 LIMITATIONS

This report has been prepared by Environmental Earth Sciences VIC ABN 13 109 404 024 in response to and subject to the following limitations:

- 1. The specific instructions received from City of Port Phillip;
- 2. The specific scope of works set out in PO213030 issued by Environmental Earth Sciences for and on behalf of City of Port Philip, is included in Section 2 (Objectives) of this report;
- 3. May not be relied upon by any third party not named in this report for any purpose except with the prior written consent of Environmental Earth Sciences VIC (which consent may or may not be given at the discretion of Environmental Earth Sciences VIC);
- 4. This report comprises the formal report, documentation sections, tables, figures and appendices as referred to in the index to this report and must not be released to any third party or copied in part without all the material included in this report for any reason;
- 5. The report only relates to the site referred to in the scope of works being located at the Former South Melbourne Gasworks ("the site");
- 6. The report relates to the site as at the date of the report as conditions may change thereafter due to natural processes and/or site activities;
- 7. No warranty or guarantee is made in regard to any other use than as specified in the scope of works and only applies to the depth tested and reported in this report,
- 8. Fill, soil, groundwater and rock to the depth tested on the site may be fit for the use specified in this report. Unless it is expressly stated in this report, the fill, soil and/or rock may not be suitable for classification as clean fill if deposited off site; and
- 9. Our General Limitations set out at the back of the body of this report.

13 REFERENCES

- Australian and New Zealand Environment and Conservation Council (ANZECC) and ARMCANZ, 2000. Australian and New Zealand guidelines for fresh and marine water quality;
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ENVIRONMENTAL EARTH SCIENCES GENERAL LIMITATIONS

Scope of services

The work presented in this report is Environmental Earth Sciences response to the specific scope of works requested by, planned with and approved by the client. It cannot be relied on by any other third party for any purpose except with our prior written consent. Client may distribute this report to other parties and in doing so warrants that the report is suitable for the purpose it was intended for. However, any party wishing to rely on this report should contact us to determine the suitability of this report for their specific purpose.

Data should not be separated from the report

A report is provided inclusive of all documentation sections, limitations, tables, figures and appendices and should not be provided or copied in part without all supporting documentation for any reason, because misinterpretation may occur.

Subsurface conditions change

Understanding an environmental study will reduce exposure to the risk of the presence of contaminated soil and or groundwater. However, contaminants may be present in areas that were not investigated, or may migrate to other areas. Analysis cannot cover every type of contaminant that could possibly be present. When combined with field observations, field measurements and professional judgement, this approach increases the probability of identifying contaminated soil and or groundwater. Under no circumstances can it be considered that these findings represent the actual condition of the site at all points.

Environmental studies identify actual sub-surface conditions only at those points where samples are taken, when they are taken. Actual conditions between sampling locations differ from those inferred because no professional, no matter how qualified, and no sub-surface exploration program, no matter how comprehensive, can reveal what is hidden below the ground surface. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from that predicted. Nothing can be done to prevent the unanticipated. However, steps can be taken to help minimize the impact. For this reason, site owners should retain our services.

Problems with interpretation by others

Advice and interpretation is provided on the basis that subsequent work will be undertaken by Environmental Earth Sciences VIC. This will identify variances, maintain consistency in how data is interpreted, conduct additional tests that may be necessary and recommend solutions to problems encountered on site. Other parties may misinterpret our work and we cannot be responsible for how the information in this report is used. If further data is collected or comes to light we reserve the right to alter their conclusions.

Obtain regulatory approval

The investigation and remediation of contaminated sites is a field in which legislation and interpretation of legislation is changing rapidly. Our interpretation of the investigation findings should not be taken to be that of any other party. When approval from a statutory authority is required for a project, that approval should be directly sought by the client.

Limit of liability

This study has been carried out to a particular scope of works at a specified site and should not be used for any other purpose. This report is provided on the condition that Environmental Earth Sciences VIC disclaims all liability to any person or entity other than the client in respect of anything done or omitted to be done and of the consequence of anything done or omitted to be done by any such person in reliance, whether in whole or in part, on the contents of this report. Furthermore, Environmental Earth Sciences VIC disclaims all liability in respect of anything done or omitted to be done and of the consequence of anything done or omitted to be done and of the consequence of anything done or omitted to be done and of the consequence of anything done or omitted to be done by the client, or any such person in reliance, whether in whole or any part of the contents of this report of all matters not stated in the brief outlined in Environmental Earth Sciences VIC's proposal number and according to Environmental Earth Sciences general terms and conditions and special terms and conditions for contaminated sites.

To the maximum extent permitted by law, we exclude all liability of whatever nature, whether in contract, tort or otherwise, for the acts, omissions or default, whether negligent or otherwise for any loss or damage whatsoever that may arise in any way in connection with the supply of services. Under circumstances where liability cannot be excluded, such liability is limited to the value of the purchased service.



FIGURES











TABLES



TABLE T1: STANDING WATER LEVELS

24-27 June 2013

Date

ore ID	SWL _{TOC} (m)		Stick-IID (m)				
		SWL _{GS} (m)	(m) 45-4555	TOC m AHD	GS m AHD	SWLGS (M AHU)	
3W01	7.754	7.764	-0.01	1.96	1.97	-5.79	
3W02	8.291	8.401	-0.11	1.97	2.08	-6.32	
GW03	Dry	Dry	-0.06	2.375	2.435	1	
GW04	8.62	8.78	-0.16	2.34	2.5	-6.28	•
GW05	8.252	8.422	-0.17	1.94	2.11	-6.31	
GW06	6.6	6.67	-0.07	1.555	1.625	-5.05	
GW07	7.8	7.86	-0.06	1.775	1.835	-6.03	
GW08	8.07	8.19	-0.12	1.71	1.83	-6.36	
GW09	8.907	9.097	-0.19	1.67	1.86	-7.24	
GW10	8.316	8.436	-0.12	1.875	1.995	-6.44	
GW11	7.45	7.55	-0.1	1.75	1.85	-5.70	
GW12	7.445	7.545	-0.1	1.62	1.72	-5.83	
GW13	7.76	7.85	-0.09	1.82	1.91	-5.94	
GW14	7.359	7.469	-0.11	1.94	2.05	-5.42	
GW15	9.08	9.2	-0.12	2.195	2.315	-6.89	
GW16	5.632	5.702	-0.07	2.505	2.575	-3.13	
GW18	9.289	9.389	-0.1	2.43	2.53	-6.86	
GW19	7.837	7.937	-0.1	2.31	2.41	-5.53	
GW20	Dry	Dry	-0.1	2.105	2.205	-	
GW21	8.354	8.454	-0.1	2.535	2.635	-5.82	
GW22	8.563	8.773	-0.21	2.335	2.545	-6.23	
GW23	9.06	9.165	-0.105	2.67	2.775	-6.39	
GW24	9.06	8.79	-0.1	2.62	2.72	-6.07	
GW25	7.965	8.095	-0.13	1.73	1.86	-6.24	
GW26	7.664	7.774	-0.11	1.73	1.84	-5.93	
GW27			-0.07	1.87	1.94	-	
GW28	8.001	8.101	-0.1	1.71	1.81	-6.29	
GW29	8.57	8.7	-0.13	1.945	2.075	-6.63	
GW30	8.978	9.088	-0.11	1.79	1.9	-7.19	
GW31	7.498	7.638	-0.14	1.68	1.82	-5.82	
GW32	7.616	7.26	-0.1	1.8	1.9	-5.36	
GW33	7.469	7.32	-0.1	1.79	1.89	-5.43	
GW34	7.69	7.84	-0.15	1.87	2.02	-5.82	
GW35	6.949	7.024	-0.075	1.59	1.665	-5.36	
GW36	7.027	2002	-0.07	1.92	1.99	-5.11	
GW37	8.177	8.242	-0.065	1.892	1.957	-6.29	
GW38	9.08	9.174	-0.094	1.874	1.968	-7.21	
GW39	8.34	8.423	-0.083	2.331	2.414	-6.01	
GW40	7.803	7.971	-0.168	2.149	2.317	-5.65	
GW41	8.05	8.148	-0.098	2.485	2.583	-5.57	Freshwater heads
GW42(D)	9.34	9.431	-0.091	2.518	2.609	-6.82	-6.73
GW43(D)	7.341	7.399	-0.058	2.262	2.32	-5.08	-4.997
GW44(D)	8.908	8.987	-0.079	2.07	2.149	-6.84	-6.8070

-	10	-
	-	
	25	
	82	
	11	
	211	
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	E U	
	12	

TABLE T2: SUMMARY OF ONSITE WELLS RESULT

							Field_ID	GW01	GW02 G	W05 GW	18 GW1	19 GW22	GW23	GW24	GW31	GW35	GW39	GW40	GW41 GV	W42D GW	143 SPL	T DUP1	GW44
ChemName Units	EQL	ANZECC 2000 MW	ADWG 2011 Health	Recreation	Livestock	Irrigation	Trade Waste	EM12001.20	1 200/ 20 EIM	200000	0000 EMI20	001 / EMI 2001	20 61412000	1 EM120002	CM 120001	EM 1200/20	Emi 200077	m1200/20	1200077	2000/7	1 1000		/ Emilo0000
BTEX					ľ			-	ŀ	-	-						ŀ	ŀ	-		-	-	
Berzene µg/L	÷	700	-	4			1000	4	+	7 <1	~	4	61	3380	4	4	72	4	<1 4	425 <	1	4	1120
Efftyfbenzene µg/L		5	300				2000	8	8	8 ·	0	0	52	<100	8	8	41	8	0	4 6	0	8	36
Toluere Jg/L Views (m.8.o.)	- 0	180	8		+		2000	2 0	2 0	4 () 4 () 7 ()	20	2 0	n .	1100	20	2 0	-	20	2 0	16	2 0	20	400
Xylene (o) ug/L	-		l		l	ſ		0	0	0	8	8	12	535	0	8	. 9	0	0	=	10	0	112
Xylene Total µg/L	0		009	20			2000	<4	45	<4 <4	1 44	42	15	1635	4	42	13	45	45	27	4	4	297
I norg an ics	_		-							-	_	_			_		_				_		_
Alkalinity (total) as CaC 03 mg/L	-							654	414	179 46	0 87	227	348	657	370	515	362	201	229	181 42		•	966
Ammonia as N µg/L	10	910	900	1500			000'002	3320 3	<u>99,000</u> 42	V, 000 102	0 83.Z	01/	193,000	947,000	2000	25/0	290,000	160	800 2,47	10,000 13.	30 39(1390	286,000
Anions Iotal med/L	10.0		Ì					1.0	90	10.0	V10 0	11.1	10.0	13.1	40.8	113	41.1	108	4U	4/8 30		•	BBL
Chloride tool moul	-		260			200		1800	800	34 071	0	44	36	0.07	0.00	23 2	43	3460	9000 0000	1100 06			1220
Cvanide Total mo/L	0.004	0.004	0.08	1.6	l		10	0.017	0.018 0.	101 0.02	28 0.06	0.14	0.054	0.209	0.212	0.015	0.116	<0.004	0.035 0.	-025 <0.0	004	5 <0.004	0.75
Fluoride mg/L	0.1		1.5	30	7	-	30	1.4	-	4.5 0.7	7 0.7	0.7	02	0.5	3.6	2.2	1.7	0.6	1.4 (0.6 0.	4		0.5
Ionic Balance %	0.01							0.6	1.68	5.1 6.9.	4 0.37	7 2.48	0.1	1.88	5.04	5.82	4.43	4.73	1.7 3	3.48 2.0	- 20		25.7
Nitrate (as N) mg/L	0.01				30			0.06	0.07 (0.05 0.1.	5 ≤0.0	11 0.82	1.12	59	0.14	<0.01	0.08	1.39	<0.01 <	0.01 <0.0		•	<0.01
Nitrate mg/L	0.01		60	1000	400			0.27	0.31 1	0.22 0.6	×0.0	11 3.63	4.96	128.47	0.62	<0.01	0.35	6.16	<0.01 <0	0.01 <0.	- 01		<0.01
NITTLE (as N) mg/L	0.01		2 C C C			1000	00100	10.05 er a	= 0.01	0.01 0.0	n 40.0	10.05	0.04	0.12	10.05	10.05	0.04	<0.01	<0.01 40 40 40 40 40 40 40 40 40 40 40 40 40	10.0 L0.0	-	•	0.05
Pri (Lau) Dendius Dherehoniene D mulli	100		0.000		t	202.77	0.01=0.0	-0.04	-0.04	002 100	100	1004	1002	171	-0.04	10.0	10.0	1004	0.01	000			000
Predotive Fritospitorus da P Sodium (Eitharad)			I		t	120		807	0.01	40.01 260s	-0.0 VIII -0.0	78	00	10.02	40.0	10.02	80	1400	530 3	0.07 0.00 3630 404			10.02
Sulphate as S mg/L	- 10		200	10.000	1000	1	100	-		· ·	2 2	2.		3.			, ,	NAL -	я 27.	NOT -	400	•	
Sulfate as SO4 - Turbidimetric (Filtered) mo/L	-		200	10.000	1000		100	178	1520 2	350 128	1280	9 256	411	2860	314	403	1570	314	503 14	4.400 121		1210	6950
TDS mg/L	10		1000		3000	500		3920	4200	15,61	00 278(2 596	1120	4600	2400	5370	2060	5300	4400	7,000 18.2	200	•	9310
Mo noaromatic Hydrocarbons																							
1,2,4-trimethylbenzene µg/L	5							<5	<5	<5 <5	5	<5	19	160	€5	<5	<5	<5	<5	<5 <1	5	<5	30
1,3,5-trimethylbenzene µg/L	2							<5	€5	<5 55	\$	\$	22	<100	22	<5	\$5	€5	<5	~2	2	\$	÷
Isopropylberzene µg/L	-							\$	Ş	ۍ ۵	\$	\$	10	<100	Ş	\$5	\$	\$	\$	\$	5	\$	\$
n-butylbenzene µg/L	÷							\$	Ŷ	\$	₩	\$	\$	×100	\$	\$	\$	\$	\$	\$		\$	\$
n-propyldenzene µg/L	e l							Ø	Ş	\$ 7	\$	\$	\$	<100	÷	Ŷ	Ş	Ş	÷	\$ •	' 	\$	Ŷ
p-isopropyrouerie jug/L	0 4							9 4	Ø 4	0 4	0 1	04	9 4	B	9 4	0 4	04	9 4	0 4	0 4		₽ 4	9 4
Schund Land Brite By Land By L	- -		05		t	I	0000	7 4	7 4	7 4	7 %	7 4	7 4	3	7 %	7 5	7 4	7 4	7 4	7 5		7 4	74
tert-but/libenzene ug/L	- 10		3		T		0.007	2 40	7 1 0	7 49 7 49	7 1 0	9	9	×100	9	9	, A	9	, 40	7 V	, , , ,	9	v v
Heavy Metals																							
Aluminium (Filtered) mg/L	0.01		02		2	-0		<0.01	<0.01 (7.02 0.0	1 0.04	4 <0.01	0.02	0.02	<0.01	<0.01	<0.01	0.04	<0.01 0	0.45 <0)	.01 <0.0	5 <0.01	<0.01
Arsenic (Filtered) mg/L	0.001	0.0023	0.007	0.14	0.5	0.1	1	0.478	0.126 0	281 0.00	34 2.0	§ 0.01	0.554	0.017	0.425	1.11	0.682	0.01	0.03 0.03	.016 0.0	03 0.00	3 <0.001	0.103
Boron (Filtered) mg/L	0.05		4	80	5	0.5	25	1.37	0.7	1.11 1.0.	1.51	1 0.88	1.57	0.6	3.03	1.08	1.57	0.67	0.84 0	0.28 0.5	99 1.2	1.08	0.78
Cadmium (Filtered) mg/L	0.0001	0.0055	0.002	0.04	0.01	0.01	2	0.0001 <	:0.0001 0.	0008 <0.00	001 0.000	0.0004	<0.0001	<0.0001	0.0001	0.0003	0.0004	0.0002 L	0.0006 0.0	0002 0.00	007 0.00	7 0.0009	0.0004
Calcium (Filtered) mg/L	1 0.004	0.004			,	1000	40	345	236	304 96	8 231	85	23	8	78	160	226	466	530	567 43		- 0	468
Conner (Filtered) mg/L mo/I	0.001	0.0013	•	40	0.6	0.0	10	0.000	0 003	0.01 0.00	14 0.00	0.002	0.001	0.000	0.001	0.002	0.004	0.065	0 000	0.018	00	0.022	0.01
Iron (Filtered) mg/L	0.05					0.2	100	2.76	20.4	13.6 <0.0	15 255	10.07	3.72	0.13	0.6	7.56	67.8	0.39	0.18	13.3 0.2	26	0.24	49.4
Magnesium (Filtered) mg/L	-				600			287	66	76 72	7 93	28	9	45	73	661	17	151	221 1	1060 63	- 88	•	420
Manganese (Filtered) mg/L	0.001		0.5	10			10	0.266	2.17	3.41 1.1	1 10.3	3 0.047	0.041	0.035	0.19	0.741	3.82	0.862	0.409 2	24.6 6.6	60	2	19.8
Nickel (Filtered) mg/L	0.001	0.07	0.02	0.4	٠	0.2	10	0.056	0.002 0	1.058 <0.0	101 0.04	4 0.053	0.002	0.004	0.094	0.02	0.059	0.041	0.013 2	2.22 0.0	162 0.05	3 0.072	0.064
Potassium (Filtered) mg/L		0 000		4		0 00		78	27	40 20	4 47	28	7	¢	50	59	16	60	8	220 17			61
Seletium (nuerea) mg/L	0.00	0.000		0.6	20.0	70.02	0	10.04	0 000	YO V 1000	10-	10:0~ I	10.00	10.00	10.02	10.02	10:02	10.04	0 000		100		1000
Linc (rimorod) I and (Filtered) mo/]	0.001	0.004	, 60	0.0	04	4	10	> 000	20 001 St	1001 <0.0	010 <000	11 0.002	<0.012 <0.001	0.00	<0.001	<0.0014	<0.001	<0.001	c0.001 <0	0.001	01 000	0000	0000
Polycyclic Aromatic Hydrocarbons (PAH)																							
Naphfhalene µg/L	-	70						-7	12	1> 1>	L>	L> .	2>	6470	22	1>	19	<7 F	<2	31 <	7 <1	L>	572
Total Petroleum Hydrocarbons (TPH)				H	H																		
C10 - C14 µg/L	50							<50	110	50 <5.	0 140	<50	730	11,700	99	<50	500	99	<50 7	760 <5	<20	<50	98,300
00 - 03 Jg/L	707	130	2		+		OUUT	NV VI	-20	201- CA	0 <2(1075 D	NO.	0000	N	-20	100	<00	200	480	N 20	200	000 01
C10- 020 C29-C36 10/1	PO 100							<80 <70	<550	100 <80	2 C	250	<50 <50	900 BU	-P0	~F0	<50 <50	-F0	200 200 200 200 200 200 200 200 200 200	240	20 210	-P01-	680
+C10 - C36 (Sum of total) uo/L	20	600	009		l	ſ		200 - 250 81	10-835	030 <50	1 1670 - 1	(695 <50	1750 - 177	5 15.070 - 15.10	110 - 160	300-350	2070 - 2095	50 35	30 - 380 1100	0-1125 <5	<10	<20	115.600 - 116.0
Total Recoverable Hydrocarbons (TRH)	F				ŀ	ſ																	
C6-C10 less BTEX (F1) µg/L	20											-									_	•	•
C6-C10 µg/L	20							89	<20	20 20	20	<20	260	5110	8	<20	110	8	<20	440	20	8	1890
C10-C16 µg/L	50		Ì					<100	270	380 <10	0 650	< 100	08/	10200	<100	180	940	<100	250 6	670 <10	00	<100	81900
C10-C04 Pg/L	001		I		t	I		<100	<100	-100 -10	-10.	2 2100	070 V	< 100	<100	<100	<100	100	- 100	c100 <10	00	<100	<100
C10 - C40 (Sim of total) Ind	100							001	870	070 <10	1780	< 100	1600	12 600	130	340	2160	<100	350 8	850 <10	00 <10	<100	94.300
TPH - Silica Gel Clean up			ĺ	l	t	Ī																	
TPH C10-C14 Fraction after Silica Cleanup uo/L	50		ľ		ľ						06		170	11700			190			<50 -			56000
TPH C15-C28 Fraction after Silica Cleanup ug/L	100									•	320		480	920			130		•	<100	•	•	2080
TPH C29-C36 Fraction after Silica Cleanup µg/L	50										<60		<50	<50			<50			<50 -			<50
C10 - C36 Fraction (sum) (SG) µg/L	50	600	009								410		650	12600			320			<50 -			58100
TRH - Silica Gel Cleanup															Ĩ								
>C10 - C16 Fraction (SG) µg/L	100		Ì		1						270		290	10200			310			- 100		•	48000
2C16 - C34 Fraction (SG) pg/L 2C34 - C40 Fraction (SG) 10/1	100		t	Ť	t	Ī	T		+		<101		30V <100	380 <100			010 012	+		100			<100
>C04 = C40 Fraction (sum) (SG) no/1	100		T	T	t	ſ					490		0/9	10600			310						48800



								Field_ID Lab Banort Number	GW07 EM1306798	GW08 EM1306766	GW26 EM1306820	GW28 EM1 306738	Dup 2 EM1306738	SPLIT 2 383084	GW29 EM1306798	GW30 EM1306798	GW37 EM1306766	GW38 EM1306798
ChemName	Units	EQL	ANZECC 2000 MW 95%	ADWG 2011 Health	Recreation	Livestock	Irrigation	Trade Waste				00						
BTEX																		
Benzene	hg/L	-	200	-	1			1000	2	15	V	۰ ۲	4	4	v	4	38	269
Ethylbenzene	hg/L	, ,	5	300				2000	8	²	8	5 5	8	2	9	5	₽;	15
Vulene (m & n)	hg/L	- ~	100	000				2000	20	7 6>	20	2°	2 8	- 0	20	27 C>	= e.	151
Xylene (o)	hg/L	-							6	- ²	6	- ²	. 4	· 7	. 61	- ²	5	43
Xylene Total	hg/L	3		600	20			2000	<4	<4	4	<4	4	\$3	44	<4	5	119
Inorganics Alkalinity (total) as CaCO3		Ŧ							633	300	97K	404	1	1	407	ARG	370	E14
Ammonia as N	hg/L	10	910	500	1500			200,000	105,000	1,150,000	1290	84,600			20	110	290,000	449,000
Anions Total	meq/L	0.01							26.4	41.7	37.4	21.2			38.1	46.6	33	59.9
Cations Total	meq/L	0.01		580			000		25.8	100	32.8	19.2		,	39.7	40.9	30.9	61.2
Chloride Cumido Toto I	mg/L		V OU V	0.02	16		00/	10	350	248	000	302	0.010	- 000	200 07	000	289	230
Cyalitude Total	ma/L	0.1	0.004	1.5	30	2	÷	30	0.027	0.3	1.7	0.010	0.010	0.000	1.004	40,004	0,100	1 10
Ionic Balance	%	0.01					1		0.98	41.2	6.45	4.86			1.98	6.51	3.32	1.07
Nitrate (as N)	mg/L	0.01				30			1.73	0.28	0.04	0.01			16.1	3.74	0.17	0.01
Nitrate	mg/L	0.01		50	1000	400			7.66	1.24	0.18	0.04			71.32	16.57	0.75	0.04
Nitrite (as N)	mg/L	0.01							0.1	<0.01	<0.01	<0.01			0.06	0.08	0.07	0.04
pH (Lab)	pH_Units	0.01		6.5-8.5			4.0-9.0	6.0-10.0	6.97	5.96	6.72	7.18			6.94	5.82	6.98	6.53
Reactive Phosphorus as P Sodium (Eithood)	mg/L	10.0					120		10.0>	<0.01	0.04	<0.01	,	,	0.03 70F	10.02	10.07	<0.01
Souluini (Filteleu) Suinhata as S	ma/l	- u		EOD	10 000	1000	120	100	0/7	4	7/4	107			<u>60/</u>	0		130
Sulfate as SO4 - Turbidimetric (Filtered)	ma/l	c		8	10,000	1000		100	184	1450	285	220			372	445	830	2070
TDS	ma/L	10		1000	2000	3000	500	001	1460	2360	2300	1180			2280	2560	2080	3440
Monoaromatic Hydrocarbons																		
1,2,4-trime thylbenzene	hg/L	5							<5	<5	-5	<5	<5		<5	<5	<5	16
1,3,5-trimethylbenzene	hg/L	5							<5	<5	<5	<5	<5		<5	<5	<5	9
Isopropylbenzene	hg/L	۲							<5	<5	55	<5	<5	۰ ۲	55	<5	<5	€5
n-buty/benzene	hg/L	5							<5	<5	<5	<5	<5		₹2	<5	<5	<5
n-propylbenzene	hg/L	ı 2							5	5 I	ŝ	9 20	ŝ		ŝ	\$ 1	ب ۲	ŝ
p-isopropyltoluene	hg/L	-0 -							ŝ, i	-5 1	£, i	20 i	ŝ, i		¢β,	ŝ, i	5 1	¢, i
sec-butylbenzene	hg/L	۰ ۱		ę				0000	₽, i	¢, '	₽ Y	¢, ŕ	₽, i	, ;	₽ 4	₽ Y	£, i	₽, i
Styrene	hg/L			99				2000	₽ Y	ŝ,	₽ 4	ę, ł	₽ 4	L.	₽ 4	ę, ł	₽ 4	₽ Y
tert-butytbenzene	hg/L	۵							Ŷ	ç	Ŷ	Ŷ	Ŷ		Ŷ	Ŷ	ç	Ŷ
Aluminium (Eiltered)		0.01		0.0		ų	u		<0.01	~0.01	-0.01	-0.04	<0.01	<0.05	-0.01	~0.04	<0.01	~0.01
Areanic (Filtered)	ma/	0.00	0.0033	0.007	0 14	2	о с	F	0.002	0.170	0.07	0.314	0.308	0.02	<0.01	0.065	0.04	0.365
Boron (Filtered)	- Mar	0.05	0.400.0	4	80	2.0	0.5	25	0.95	0.8	0.47	0.81	0.86	0.8	0.53	0.55	0.93	0.91
Cadmium (Filtered)	mg/L	0.0001	0.0055	0.002	0.04	0.01	0.01	2	0.0004	0.0002	0.0005	<0.0001	<0.0001	0.0002	0.0005	0.0005	0.0002	<0.0001
Calcium (Filtered)	mg/L	-					1000		52	126	94	33	,	,	69	84	53	185
Cobalt (Filtered)	mg/L	0.001	0.001			1	0.05	10	0.001	0.009	0.034	<0.001	<0.001	<0.001	0.008	0.007	0.004	0.004
Copper (Filtered)	mg/L	0.001	0.0013	2	40	0.5	0.2	10	0.002	0.002	0.003	<0.001	<0.001	<0.001	0.004	0.003	0.001	0.002
Iron (Filtered)	mg/L	0.05					0.2	100	0.87	36.3	<u>1.69</u>	2.2	2.12	2.3	<0.05	0.71	7.1	35.7
Magnestum (Filtered)	mg/L	0001		20	10	900		10	0.170	44	346	3210	- 179	- 17	02 00	0.420	3/ 0.726	2 64
Nickel (Filtered)	ma/l	0.00	0.07	0.00	0.4	*	0.0	10	0.170	1.02	0.040	0.018	0.173	0.17	0.038	0.038	0.017	0.003
Nickel (Filtered) Dotassium (Filterad)	ma/l	100.0	0.07	20.02	0.4	-	7.0	10	90.0	e e	0.044	0.010	0.01	0.010	0.020	0.000	10.01	1003
Selenium (Fittered)	ma/L	0.001	0.003	0.01	0.2	0.02	0.02	10	<0.01	<0.01	<0.01	<0.01	<0.01	0.004	<0.01	<0.01	<0.01	<0.01
Zinc (Filtered)	mg/L	0.001	0.015	e		20	2	10	0.022	0.137	0.05	0.005	<0.005	0.01	0.02	0.088	0.021	0.013
Lead (Filtered)	mg/L	0.001	0.0044	0.01	0.2	0.1	0.2	10	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Polycyclic Aromatic Hydrocarbons (PAH)																_		
Naphthalene	hg/L	-	70						<7	<7	4	<7	4	<u>۲</u>	4	<7	27	134
Total Petroleum Hydrocarbons (TPH)	1000	00	160	160				1000	00/	06/	00/	06/	06/	067	06/	06/	C2	630
C10 - C14	ua/L	50	001	3				0001	€0	230	20 F	20	20	20	ç (20	390	8460
C15 - C28	hg/L	100							450	930	<100	160	160	<100	<100	<100	940	3370
C29 - C36	hg/L	50							110	<50	<50	<50	<80	<100	<50	<50	<50	70
+C10 - C36 (Sum of total)	hg/L	50	600	600					560 - 585	1160 - 1185	<50	160 - 210	160 - 225	<100	<50	<50	1330 - 1355	11,900
Total Recoverable Hydrocarbons (TRH)	1 100	00									Ī		Ī	00 01				
CO-CTU RES BLEA (FT)	hg/L	20							- 0.02	<0.02	<0.02	- 10	- 0.02	<0.02	- 0.02		0.05	- 0.53
C10-C16	no/L	202							<0.1	0.46	<0.1	40°-	<0.1	40.05	<0.1	₹0.1 1	0.61	8.78
C16-C34	hg/L	100							0.49	0.74	<0.1	0.17	0.24	<0.1	<0.1	<0.1	0.72	2.62
C34-C40	hg/L	100							<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C10 - C40 (Sum of total)	µg/L	100							490	1200	<100	170	240	,	<100	<100	1330	11,400
TPH - Silica Gel Cleanup		¢ L								QL.	Ī		Ī				Q.P.	0400
TPH C10-C14 Fraction after Silica Cleanup TPH C15-C28 Fraction after Silica Cleanup	hg/L	001								<100							<100	640 640
TPH C29-C36 Fraction after Silica Cleanup	ng/L	20								<50							<50	<50
C10 - C36 Fraction (sum) (SG)	hg/L	50	600	009						<50							<50	9100
TRH - Silica Gel Cleanup																		
>C10 - C16 Fraction (SG)	hg/L	100								<100							<100	8780
>C16 - C34 Fraction (SG)	hg/L	100								<100							<100	220
>C34 - C40 Fraction (Sum) (SG)	hg/L	<u>3</u> 00				Τ				×100							×100	0006
	1.01													•				



								Field ID	CW/09	GW10	GW15	GW25
								Lab Report Number	EM1306798	EM1306871	EM1306906	EM1306906
ChemName	Units	EQL	ANZECC 2000 MW 95%	ADWG 2011 Health	Recreation	Livestock	Irrigation	Trade Waste				
BTEX										1		
Benzene	µg/L	1	700	1	1			1000	<1	<1	<1	<1
Ethylbenzene	µg/L	1	5	300				2000	<2	<2	<2	<2
Toluene	µg/L	1	180	800				2000	<2	<2	<2	<2
Xylene (m & p)	µg/L	2							<2	<2	<2	<2
Xylene (o)	µg/L	1		600	20			2000	<2	<2	<2	<2
Xylene Total	µg/L	3		600	20			2000	<4	<4	<4	<4
Alkalinity (total) as CaCO3	ma/l	1					-		00	<1	42	91
Ammonia as N	ug/L	10	910	500	1500			200.000	50	<10	42	670
Anions Total	meg/l	0.01	010		,000			200,000	7.77	7.21	5.93	5.67
Cations Total	meg/L	0.01							8.25	6.38	5.6	5.25
Chloride	mg/L	1		250			700		94	24	21	27
Cyanide Total	mg/L	0.004	0.004	0.08	1.6			10	< 0.004	< 0.004	0.004	0.004
Fluoride	mg/L	0.1		1.5	30	2	<u>1</u>	30	0.5	<0.1	<0.1	0.1
Ionic Balance	%	0.01							2.97	6.22	2.89	3.91
Nitrate (as N)	mg/L	0.01			4000	30			26.1	0.01	0.04	0.01
Nitrate	mg/L	0.01		50	1000	400			115.62	0.04	0.18	0.04
Nitrite (as N)	mg/L	0.01		6595			4000	60100	0.03	< 0.01	< 0.01	< 0.01
Reactive Phosphorus as P	ma/l	0.01		0.5-0.5			4.0-3.0	0.0-10.0	0.02	<0.01	<0.01	<0.49
Sodium (Filtered)	ma/L	1					120		177	137	82	82
Sulphate as S	mg/L	5		500	10,000	1000		100	-	-	-	-
Sulfate as SO4 - Turbidimetric (Filtered)	mg/L	1		500	10,000	1000		100	72	314	216	158
TDS	mg/L	10		1000		3000	<u>500</u>		<u>520</u>	<u>680</u>	<u>560</u>	<u>564</u>
Monoaromatic Hydrocarbons												í l
1,2,4-trimethylbenzene	µg/L	5							<5	<5	<5	<5
1,3,5-trimethylbenzene	µg/L	5							<5	<5	<5	<5
Isopropylbenzene	µg/L	1							<5	<5	<5	<5
n-butylbenzene	µg/L	5							<5	<5	<5	<5
n-propylbenzene	µg/L	5							<5	<5	<5	<5
sec-butylbenzene	µg/L	5							<5	<5	<5	<5
Styrene	ug/L	1		30				2000	<5	<5	<5	<5
tert-butvibenzene	ug/L	5							<5	<5	<5	<5
Heavy Metals	1								1	1		
Aluminium (Filtered)	mg/L	0.01		0.2		5	5		<0.01	0.03	<0.01	<0.01
Arsenic (Filtered)	mg/L	0.001	0.0023	0.007	0.14	0.5	<u>0.1</u>	1	0.011	0.018	<0.001	0.034
Boron (Filtered)	mg/L	0.05		4	80	5	<u>0.5</u>	25	<u>0.62</u>	0.34	<u>1.51</u>	<u>1.38</u>
Cadmium (Filtered)	mg/L	0.0001	0.0055	0.002	0.04	0.01	0.01	2	0.0005	0.0003	0.0004	0.0004
Calcium (Filtered)	mg/L	1	0.004				1000	10	4	3	12	18
Cobalt (Filtered)	mg/L	0.001	0.001	0	40	1	0.05	10	<0.001	0.002	0.01	0.002
Iron (Filtered)	mg/L	0.001	0.0013	2	40	0.5	0.2	100	<0.003	0.002	<0.05	0.003
Magnesium (Filtered)	mg/L	1				600	0.2	100	-0.00	2	14	7
Manganese (Filtered)	mg/L	0.001		0.5	10			10	0.034	0.017	0.102	0.063
Nickel (Filtered)	mg/L	0.001	0.07	0.02	0.4	1	0.2	10	0.054	0.067	0.036	0.066
Potassium (Filtered)	mg/L	1							4	4	11	8
Selenium (Filtered)	mg/L	0.001	0.003	0.01	0.2	0.02	0.02	10	<0.01	<0.01	<0.01	<0.01
Zinc (Filtered)	mg/L	0.001	0.015	3		20	2	10	0.036	0.067	0.031	0.04
Lead (Filtered)	mg/L	0.001	0.0044	0.01	0.2	0.1	0.2	10	<0.001	<0.001	<0.001	<0.001
Polycyclic Aromatic Hydrocarbons (PAH)												
Naphthalene	µg/L	1	70						<7	<7	<7	<7
Total Petroleum Hydrocarbons (TPH)		00	450	450				4000	100	-00	-00	100
06-09	µg/L	20	150	150				1000	<20	<20	<20	<20
C10 - C14 C15 - C28	µg/L	50							<100	<00	<50	<00 <100
C29 - C36	µg/L µg/l	50							<50	50	<50	<100
+C10 - C36 (Sum of total)	ug/l	50	600	600					<50	50 - 125	<50	<50
Total Recoverable Hydrocarbons (TRH)	P9'-		000		1					00 .20		
C6-C10 less BTEX (F1)	mg/L	0.02			i					-	-	- 1
C6-C10	mg/L	0.02			İ				<0.02	<0.02	<0.02	<0.02
C10-C16	mg/L	0.05							<0.1	<0.1	<0.1	<0.1
C16-C34	mg/L	0.1							<0.1	0.13	<0.1	<0.19
C34-C40	mg/L	0.1							<0.1	<0.1	<0.1	<0.1
C10 - C40 (Sum of total)	µg/L	100							<100	130	<100	<100



			FIEIG_ID	LMS	I.M9	GWUI	I rena	GWZ	GWZ	GWUZ	I rena	GW3	GW3	GW3	I rena	GW4	GW4	GW4	I rena
			Sampled_Date- Time	7-Feb-06	18/04/2011	25/06/2013		6-Feb-06	15-Jun-06	26/06/2013		8-Feb-06	14-Jun-06	20/04/2011		8-Feb-06	13-Jun-06	20/04/2011	
Chem_Group	ChemName	Units	EQL																
	Benzene	hg/L	0.5	۲,	4	Ł	S	2	2	F	s	2	F	2	s	Ŷ	2	2	S
	Ethylbenzene	hg/L	0.5	<1	<2	2	S	<1	<1	<2	s	<1	3	~2	S	<1	<1	2	s
	Toluene	hg/L	0.5	1	<2	2	S	1	<1	<2	s	<1	4	2	S	<1	<1	2	s
	Total BTEX	mg/L	0.001	<.004	<.001		S	<.004	<.004		S	<.004	0.012	0.005	S	<0.004	<0.004	<0.001	S
MAH	Xylene (m & p)	hg/L	+		2	\$	S			4				9				8	
	Xylene (o)	hg/L	0.5		2	\$	S			4				2				8	
	Xylene Total	hg/L	2	<0.001	2	4	S	ţ,	2	4	S	4	4	3 - 4	S	<0.001	<0.001	\$	S
	1,2,4-trimethylbenzene	hg/L	0.5	4	<5	€5	S	2	4	€	S	2	2	€	s	4	2	€5	S
	Naphthalene	hg/L	0.2	<1	1	<7	S	~	<1	<7	S	<1	15	<5 - 1.2	S	<1	0.15	1	s
	Ammonia as N	mg/L	0.01	3.6	1.43	3.32	S	27	89	399	-	170	340	660	-	0.15	0.16	0.29	-
	Chloride	mg/L	+	1600	1040	1890	S	2300	2100	926	0	33	59	64	-	56	59	57	S
	Cyanide (Free)	mg/L	0.004		0.012		100 C							0.005	1.00			0.1	
	Cyanide Total	mg/L	0.004	0.017	0.016	0.017	s	0.08	0.097	0.018	٥	0.022	0.041	0.07	S	0.24	0.22	0.32	S
	Fluoride	mg/L	0.1		1.3	1.4	S			۲				1.3				0.6	
	Nitrate (as N)	mg/L	0.01	0.14	0.39	0.06	D	< 0.01	0.47	0.07	s	<0.01	0.02	<0.01	S	0.79	11	15.7	_
Ionic Balance	Nitrite (as N)	mg/L	0.003	0.05	0.1	<0.01	0	<0.01	0.25	<0.01	S	<0.01	0.03	<0.01	S	0.17	0.19	60:0	٥
	pH (Lab)	pH_Units	0.01	7	7.17	6.73	S	7.2	7.9	6.68	S	7.6	6.5	6.6	S	8.1	7.6	7.11	S
	Reactive Phosphorus as P	mg/L	0.01		<0.01	<0.01	S			<0.01				<0.01				0.06	
	Sodium (Filtered)	mg/L	1	590	400	607	S	1100	960	420	0	40	72	62	s	26	20	180	-
	Sulphate	mg/L	1	75	120		S	960	1100			1000	2700	2070	S	220	180	222	S
	Calcium (Filtered)	mg/L	1	290	196	345	S	380	380	236	s	130	340	232	S	34	22	50	S
	TDS	mg/L	5	3400	2780	3920	s	4900	4900	4200	s	1400	3500	3410	S	590	510	1010	s
	Aluminum (Filtered)	mg/L	0.01		<0.01	< 0.01	S			< 0.01				<0.01	1.00			<0.01	
	Arsenic (Filtered)	mg/L	0.001	0.029	0.051	0.478	-	0.12	0.18	0.126	s	0.071	0.67	0.01	S	0.14	0.37	0.12	s
	Boron (Filtered)	mg/L	0.05	1.3	1.3	1.37	S	0.63	0.75	0.7	s	0.61	1.2	1.3	S	0.07	< 0.01	0.05	S
	Cadmium (Fittered)	mg/L	0.0001	<0.0002	0.0001	0.0001	S	<0.0002	<0.0002	<0.0001	s	<0.0002	<0.0002	<0.0001	S	<0.0002	<0.0002	<0.0001	S
	Chromium (hexavalent) (Filtered)	mg/L	0.01		<0.01									< 0.01	100 C			< 0.01	
	Cobalt (Filtered)	mg/L	0.001	< 0.01	0.002	0.003	S	< 0.01	< 0.01	0.002	S	<0.01	0.019	0.021	S	<0.01	<0.01	0.001	s
	Copper (Filtered)	mg/L	0.001	0.019	0.005	0.002		0.004	0.001	0.003	S	0.002	< 0.001	0.001	S	0.008	0.006	0.006	S
Heavy Metals	Iron (Filtered)	mg/L	0.05	Ī	<0.05	2.76	-			20.4				27				0.23	
	Lead (Filtered)	mg/L 	0.001	<.005	<0.001	<0.001	s o	<0.005	<0.005	<0.001	s o	<0.005	<0.005	<0.001	s o	<0.005	<0.005	0.001	s .
	Mananasa (Eiterad)	mg/L	0.001	190	21U 0.107	182 0 285	n u	210	2.0	247	n u		0	4.10	n u	000	3.8	20	- 0
	Monitor (Etherol)		0.001	10000	1000	0.000	>	100007	-0.001		,	1000	0000	1000.0~	0	10000	-0004	00000	0
	Nickel (Fittered)	mg/L	0.001	<0.005	0.002	0.056	S	<0.005	0.034	0.002	S	0.018	600'0	0.014	n o	<0.005	0.008	0.002	o o
	Potassium (Filtered)	mg/L	+	48	53	78	s	26	23	27	s	14	15	16	S	27	24	26	S
	Selenium (Filtered)	mg/L	0.001	0.0084	<0.01	<0.01	S	0.01	0.0069	<0.01	S	0.0017	<0.001	<0.01	S	0.0035	<0.001	<0.01	S
	Zinc (Filtered)	mg/L	0.001	0.069	0.024	0.039	S	0.028	0.013	0.021	S	0.044	0.02	0.017	S	0.006	0.014	<0.005	٥
	C10-C16	hg/L	50		<100	<100	S			270				610	1.00			<100	
TRH	C16-C34	hg/L	100		290	200	S			600				1300	100 C			910	1
	C34-C40	hg/L	100		<100	<100	S			<100				<100				290	
	C8 - C3	hg/L	20	<0.04	<20	<20	S	<40	<40	<20	S	<40	<40	<20	S	<40	<30	<20	s
	C10 - C14	hg/L	50	<0.04	<50	<50	S	<40	<40	110	-	<40	410	420	S	<40	<30	<50	s
НД	C15 - C28	µg/L	100	0.2	270	200	s	300	300	700	-	300	500	1440	_	100	<300	570	_
	C29-C36	µg/L	50	<0.1	60	<50	S	<100	<100	<50	so -	<100	<100	150	s -	<100	<300	510	_
	+C10 - C36 (Sum of total)	нgr	50	200	330 - 305	200 - 250	S	300	300	810 - 835		300	910	2010		100	<800	1080 - 1105	-

Notes: 1.5. Stable (with sight irrelease of decrease in concentration) 1.5. Stable (with sight irrelease of decrease in concentrations from the baseline concentrations for the rest of the conternination 1.1. Increase, (based on one magniture of order lower from the baseline concentrations for heavy metals and less than haif of the baseline concentrations for the rest of the conternination 3. D - Decrease (based on one magniture of order lower from the baseline concentrations for heavy metals and less than haif of the baseline concentrations for the conternination 3. D - Decrease (based on one magniture of order lower from the baseline concentrations for heavy metals and less than haif of the baseline concentrations for the conternations for the conternation of the baseline concentrations for the conternation of the conternations for the conternation of the baseline concentrations for the conternation of the conternation of the baseline concentrations for the conternation of the baseline concentrations for the conternation of the conterna



TABLE T6: SUMMARY OF GROUNDWATER TREND ASSESSMENT

0.1 0.1 0.1 5.44 5.44 0.14 0.14 0.156 1.64 0.079 53.8 0.01 82 2.19 <0.0001 0.017 38 <50 <100 <50 GW21 20/04/2011 0.02 <0.01 <0.082 <100 2 00000 20 0.031 2.2 <0.0002 GW21 22-Jun-06 <0.001 <40 <100 <240 0.02 <0.01 4.5 24 1300 330 1900 0.085 0.014 100 4.1 <40 <50</td> 140 1110 1530 140 <50</td> 120 <50</td> 1250 1670 1.51 0.0003 93 10.3 -0.04 47 GW19 24/06/2013 <0.01 264 231 0.094 0.06 255 <0.001 650 1130 816 69 14.2 GW19 20/04/2011 198 198 000 00 07 07 <0.01</pre> <0.0002 GW19 21-Jun-06 <0.0001 0.052 42 <0.001 1.3 120 63 53 1600 250 2300 230 600 0.071 <0.001 0.037 <0.001 <0.005 830 -0.001 204 <5 <5 <7 7.02 9710 0.028 0.07 0.028 0.07 0.028 0.07 0.028 0. 0.15 0.01 6.83 <0.01 5.83 3590 15.600 15.600 10.01 1.01 1.01 1.01 0.002 0.004 <0.05 <0.01 727 1.1 25/06/2013 GW18 0.002 <0.01 <0.01 <100 <100 <100 <20 </pre> \$20 Δ4 5 8 8 V <0.0001 <0.005 62 <0.006 <0.005 0.005 1.5 <0.0002 GW18 23-Jun-06 < 1 < 1 < 0.004</pre> <0.001 <1.5 660 0.24 0.24 0.68 7.7 150 240 170 1700 <0.01 <0.005 130 0.1 <40 100 100</pre> <40 -----136 76 3.41 -304 4920 0.02 0.281 0.058 <0.01 0.047 380 690 690 <100 <20 0.0008 GW05 27/06/2013 0.026 6.37 1030 50 880 100 20-Jun-06 0.003 0.67 0.0011 GW5 <0.004 0.022 <40 300</pre> 0.022 2000 320 2800 300 7 64 1.9 <40 -.1 <0.0001 34 <0.005 75 3.1 0.034 0.61 0.0003 GW5 6-Feb-06 800 <0.006 0.072 <0.01 <0.01 0032 160 <100 860 47 2400 360 3200 0.073 <40 v Field_ID Sampled_Date-Time EQL 0.5 0.5 0.5 0.5 0.5 0.2 0.004 0.004 0.004 0.01 0.01 0.05 0.05 0.05 0.001 0 0.001 50 100 50 50 Units µg/L µg/L µg/L µg/L н9/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L <u>µg'L</u> µg'L Elhydenzene Elhydenzene Taal ELK Xylene I ULK Taalene Taal ELK Xylene (n. K.) Kathrhidene (n. K.) Kathrhid C10 - C14 C15 - C28 C29-C36 +C10 - C36 (Sum of total) Zinc (Fittered) C10-C16 C16-C34 C34-C40 C6 - C9 ChemName Ionic Balance Heavy Metals MAH TRH ΗД Chem Group

Notes:

Stable (with sight increase or decrease in concentration)
 Increase (based on one magniture of order higher from the baseline concentrations for heavy met 3. D. - Decrease (based on one magniture of order lower from the baseline concentrations for heavy m.



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			Sampled_Date- Time	22-Jun-06	20/04/2011	25/06/2013		23-Jun-06	20/04/2011	24/06/2013		23-Jun-06	20/04/2011	27/06/2013		9-May-07	18/04/2011	27/06/2013	
Chem_Group	ChemName	Units	EQL													GW31/50090507			
	Benzene	hg/L	0.5	4	۲	2	s	56	16	61	s	6900	6350	3380	٥	Ŷ	4	٢	s
	Ethylbenzene	hg/L	0.5	4	2	2	s	41	13	52	s	150	111	<100	0	Ŷ	2	2	S
	Toluene	hg/L	0.5	2	2	2	s	4	2	e	s	1000	318	<100	٥	٢	2	2	S
	Total BTEX	mg/L	0.001	<0.004	<0.001		s	0.163	0.032		٥	10.35	9.07		S	<0.004	<0.001		S
MAH	Xylene (m & p)	рдү	-		2	\$	S		2	e	S		1550	1100	٥		\$	2	s
	Xylene (o)	hg/L	0.5		<2	<2	s		3	12	_		739	535	D		<2	⊲2	s
	Xylene Total	hg/L	2	<1	<2	<4	s	62	3 - 4	15	s	2,300	2289 - 2290	1635	۵	<0.003	<2	<4	s
	1,2,4-trimethylbenzene	hg/L	0.5	<1	<5	<5	s	23	<5	19	s	260	185	160	۵	<1	<5	<5	s
	Naphthalene	hg/L	0.2	<0.001	<۱	<7	S	0.0312	<5 - 1.2	<7	S	2,600	1820 - 4530	6470	_	<1	<1	<7	S
	Ammonia as N	mg/L	0.01	0.4	0.99	0.71	s	200	201	193	S	110	854	947	-	9	10	5.58	S
	Chloride	mg/L	+	26	06	44	S	36	38	35	S	58	42	37	0	440	550	954	_
	Cyanide (Free)	mg/L	0.004		<0.004				<0.004				0.01				<0.004		
	Cyanide Total	mg/L	0.004	0.17	0.165	0.14	S	0.26	0.086	0.054	0	0.068	0.219	0.209	S	0.3	0.118	0.212	S
	Fluoride	mg/L	0.1		9'0	0.7	S		0.1	0.2	S		0.3	0.5	S		3.1	3.6	S
	Nitrate (as N)	mg/L	0.01	1.4	62'0	0.82	S	90:0	0.48	1.12	_	0.02	5.35	29		0.09	1.37	0.14	S
Ionic Balance	Nitrite (as N)	mg/L	0.003	0.34	0.14	<0.01	٥	0.01	0.05	0.04	S	< 0.01	0.02	0.12	_	0.12	0.03	<0.01	٥
	pH (Lab)	pH_Units	0.01	7	6.17	6:99	S	7	6.52	6.83	s	7.6	7.25	7.27	S	7.9	7.06	7.44	S
	Reactive Phosphorus as P	mg/L	0.01		<0.01	<0.01	S		<0.01	<0.01	S		< 0.01	<0.01	S		0.01	<0.01	S
	Sodium (Filtered)	mg/L	+	27	111	76	s	31	39	29	s	65	67	55	0	360	454	592	S
	Sulphate	mg/L	-	220	209			480	388			1500	2340		S	360	227		0
	Calcium (Filtered)	mg/L	-	73	94	85	S	24	22	23	S	52	55	55	S	50	42	78	S
	TDS	mg/L	5	610	662	596	s	610	1280	1120	s	3200	4430	4600	s	1,700	1440	2400	s
	Aluminum (Filtered)	mg/L	0.01		<0.01	<0.01	s		< 0.01	0.02	s		< 0.01	0.02	s		0.04	<0.01	D
	Arsenic (Filtered)	mg/L	0.001	0.005	0.008	0.01	S	0.18	0.077	0.554	_	0.013	0.039	0.017	s	0.045	0.272	0.425	_
	Boron (Filtered)	mg/L	0.05	0.8	0.77	0.88	S	1.6	1.14	1.57	S	0.35	0.32	0.6	s	3.4	2.65	3.03	s
	Cadmium (Filtered)	mg/L	0.0001	<0.0002	<0.0001	0.0004	s	<0.0002	<0.0001	<0.0001	s	<0.0002	<0.0001	<0.0001	s	<0.001	< 0.0001	0.0001	s
	Chromium (hexavalent) (Filtered)	mg/L	0.01		<0.01				<0.01				<0.01				< 0.01		
	Cobalt (Fittered)	mg/L	0.001	<0.01	0.003	0.003	s	< 0.01	0.002	0.002	s	<0.01	0.001	0.002	s	<0.01	< 0.001	0.002	s
	Copper (Filtered)	mg/L	0.001	<0.001	0.003	0.002	S	<0.001	<0.001	0.001	s	0.005	0.004	0.002	D	<0.01	0.002	0.001	s
Hostor Motale	Iron (Filtered)	mg/L	0.05		0.06	0.07	S		3.69	3.72	S		0.13	0.13	S		0.06	0.6	-
	Lead (Filtered)	mg/L	0.001	<0.005	0.006	0.002	S	<0.005	<0.001	<0.001	S	<0.005	0.002	0.001	S	<0.01	<0.001	<0.001	S
	Magnesium (Filtered)	mg/L	+	24	28	28	S	3.4	2	e	S	34	38	45	S	42	51	73	S
	Manganese (Filtered)	mg/L	0.001	0.08	0.045	0.047	S	0.07	0.037	0.041	S	0.14	0.019	0.035	S	0.06	0.083	0.19	s
	Mercury (Filtered)	mg/L	0.0001	<0.0001	<0.0001		S	<0.0001	<0.0001			<0.0001	<0.0001		S	<0.001	<0.0001		S
	Nickel (Filtered)	mg/L	0.001	0.043	0.053	0.053	S	0.009	0.041	0.002	S	0.016	0.012	0.004	D	<0.01	0.002	0.094	_
	Potassium (Filtered)	mg/L	1	27	35	28	S	4.7	8	7	S	15	21	19	s	40	49	50	s
	Selenium (Filtered)	mg/L	0.001	0.0025	<0.01	<0.01	S	0.0016	< 0.01	<0.01	S	0.007	< 0.01	< 0.01	s	0.004	<0.01	<0.01	s
	Zinc (Filtered)	mg/L	0.001	<0.005	0.041	0.035	s	0.017	0.033	0.012	S	<0.005	0.013	0.011	S	0.02	0.016	0.025	s
	C10-C16	µg/L	50		<100	<100	S		550	780	S		14600	10200	D		<100	<100	s
TRH	C16-C34	hg/L	100		<100	<100	S		1160	820	S		4670	2350	D		<100	120	s
	C34-C40	hg/L	100		<100	<100	S		<100	<100	S		<100	<100	S		<100	<100	s
	C9 - C3	µg/L	20	<40	<20	<20	S	250	70	200	S	11000	9780	5110	٥	<0.04	<20	<20	s
	C10 - C14	hg/L	50	<40	<50	<50	S	770	380	730	S	15000	14,200	11,700	D	<0.04	<50	<50	s
TPH	C15 - C28	µg/L	100	<100	<100	<100	S	800	1250	1020	S	2800	6120	3290	s	<100	<100	110	s
	C29-C36	µg/L	50	<100	<50	<50	S	<100	170	<50	s	<100	220	80	S	<100	<50	<50	s
	+C10 - C36 (Sum of total)	µg/L	50	<240	<50	<50	S	1570	1800	1750 - 1775	S	17,800	20,500 - 20,540	15,070 - 15,100	S	<240	<50	110 - 160	S

Notes: 1. Stable (with sight increase or decrease in concentration) 1. Stable (with sight increase or decrease in concentrations for heavy net 2. 1 - Increase (based on one magniture of order higher from the baseline concentrations for heavy m 3. D - Decrease (based on one magniture of order lower from the baseline concentrations for heavy m



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			Sampled_Date- Time	9-May-07	18/04/2011	25/06/2013		20/04/2011	24/06/2013		20/04/2011	25/06/2013		20/04/2011	24/06/2013		21/04/2011	24/06/2013	
hem_Group	ChemName	Units	EQL																
	Benzene	hg/L	0.5	8	ŗ	4	S	28	72	_	7	4	S	2	ŕ	S	355	425	S
	Ethylbenzene	hg/L	0.5	۲,	2	2	s	2	4	s	2	2	S	2	2	S	9	4	s
	Toluene	hg/L	0.5	</td <td><2</td> <td>2</td> <td>S</td> <td>4</td> <td>7</td> <td>S</td> <td>2</td> <td>2</td> <td>S</td> <td>2</td> <td>2</td> <td>S</td> <td>61</td> <td>38</td> <td>s</td>	<2	2	S	4	7	S	2	2	S	2	2	S	61	38	s
	Total BTEX	mg/L	0.001	<0.004	<0.001		S	0.042			<0.001			<0.001			0.439		
MAH	Xylene (m & p)	hg/L	1		2	2	S	4	7	s	\$	₽	S	2	4	S	1	16	S
	Xylene (o)	hg/L	0.5		<2	<2	S	4	9	s	<2	<2	S	<2	<2	s	6	11	s
	Xylene Total	hg/L	2	8	<2	<4	۵	8	13	s	<2	<4	S	<2	<4	S	20	27	s
	1,2,4-trimethylbenzene	hg/L	0.5	ţ,	-5	€5	S	€	€	S	<5	€5	S	€	\$	S	<5	€	S
	Naphthalene	hg/L	0.2	<0.001	4	<7	S	18 - 22.3	19	S	<1	<7	S	4	<7	S	21.3 - 33	31	S
	Ammonia as N	mg/L	0.01	16	4.25	2.57	0	430	290	s	8.9	0.16	0	0.31	0.8	-	2,170	2,410	S
	Chloride	mg/L	+	4700	3400	3330	S	57	43	S	385	3450	_	298	2000	_	3380	6190	S
	Cyanide (Free)	mg/L	0.004		<0.004			0.006			<0.004		100 C	<0.004		100 C	0.013		
	Cyanide Total	mg/L	0.004	0.037	0.039	0.015	S	0.093	0.116	s	0.01	<0.004	۵	0.027	0.035	S	0.434	0.025	D
	Fluoride	mg/L	0.1		1.8	2.2	S	1	1.7	S	1	0.6	S	1.4	1.4	S	1	0.6	s
	Nitrate (as N)	mg/L	0.01	0.13	0.01	<0.01	0	0.66	0.08	٥	0.28	1.39	_	0.09	< 0.01	S	<0.01	<0.01	s
Ionic Balance	Nitrite (as N)	mg/L	0.003	<0.01	0.01	<0.01	s	0.55	0.04	٥	0.01	<0.01	S	< 0.01	< 0.01	S	0.02	<0.01	۵
	pH (Lab)	pH_Units	0.01	7	7.18	6.87	S	6.52	6.67	S	7.1	5.57	S	7.15	6.9	S	6.3	5.76	S
	Reactive Phosphorus as P	mg/L	0.01		<0.01	<0.01	S	<0.01	<0.01	S	<0.01	<0.01	S	< 0.01	<0.01	S	<0.01	0.02	S
	Sodium (Filtered)	mg/L	+	2100	2490	1710	S	68	60	S	55	1400	_	48	530	-	2450	3530	S
	Sulphate	mg/L	1	640	503		s	2250			28			226			14,800		
	Calcium (Fittered)	mg/L	t	330	96	160	S	280	226	S	128	466	_	147	530	_	375	567	S
	TDS	mg/L	5	8,700	6450	5370	s	3110	2660	S	1040	5300	_	1260	4400	_	23,400	27,000	s
	Aluminum (Filtered)	mg/L	0.01		<0.01	<0.01	S	<0.01	< 0.01	s	< 0.01	0.04	S	< 0.01	< 0.01	s	3.91	0.45	D
	Arsenic (Filtered)	mg/L	0.001	0.263	0.286	1.11	_	0.011	0.682	_	0.007	0.01	S	0.014	0.03	S	0.031	0.016	s
	Boron (Filtered)	mg/L	0.05	1.1	1.39	1.08	S	1.57	1.57	S	0.34	0.67	S	0.67	0.84	S	0.66	0.28	s
	Cadmium (Filtered)	mg/L	0.0001	<0.001	<0.0001	0.0003	s	<0.0001	0.0004	s	<0.0001	0.0002	S	< 0.0001	0.0006	S	0.0012	0.0002	S
	Chromium (hexavalent) (Filtered)	mg/L	0.01		<0.01		100 C	<0.01			<0.01		100 C	<0.01		100 C	<0.01		
	Cobalt (Filtered)	mg/L	0.001	<0.01	0.002	0.003	S	0.04	0.044	S	<0.001	0.006	S	0.001	0.002	S	9.66	7.79	S
	Copper (Filtered)	mg/L	0.001	<0.01	0.002	0.002	S	0.001	0.004	S	0.001	0.065	-	0.001	0.004	S	0.051	0.018	s
Heavy Motals	Iron (Filtered)	mg/L	0.05		0.09	7.56	_	29.5	67.8	_	<0.05	0.39	S	< 0.05	0.18	S	12.9	13.3	s
Company Canon	Lead (Filtered)	mg/L	0.001	<0.01	<0.001	<0.001	S	<0.001	<0.001	S	<0.001	<0.001	S	0.001	<0.001	S	0.002	<0.001	S
	Magnesium (Filtered)	mg/L	-	340	205	199	s	81	77	s	42	151	S	99	221	S	787	1060	s
	Manganese (Filtered)	mg/L	0.001	1.8	0.792	0.741	0	5.5	3.82	S	0.124	0.862	S	0.132	0.409	S	120	24.6	٥
	Mercury (Filtered)	mg/L	0.0001	<0.001	<0.0001		S	<0.0001			0.0002			0.0002			0.0002		
	Nickel (Filtered)	mg/L	0.001	0.01	0.007	0.02	S	0.029	0.059	S	0.005	0.041	S	<0.001	0.013	S	2.82	2.22	s
	Potassium (Filtered)	mg/L	+	80	43	59	S	17	16	S	27	60	S	24	53	S	217	220	s
	Selenium (Filtered)	mg/L	0.001	0.022	<0.01	<0.01	S	<0.01	< 0.01	S	<0.01	<0.01	S	< 0.01	<0.01	S	0.03	0.01	s
	Zinc (Filtered)	mg/L	0.001	0.02	0.014	0.014	S	0.012	0.032	S	<0.005	0.331	-	<0.005	0.024	S	2.2	0.143	٥
	C10-C16	µg/L	50		<100	180	_	690	940	s	<100	<100	S	<100	250	_	1750	670	٥
TRH	C16-C34	hg/L	100		240	160	S	1390	1220	S	120	<100	S	220	100	٥	1410	180	٥
	C34-C40	µg/L	100		<100	<100	S	<100	<100	S	<100	<100	S	<100	<100	S	110	<100	٥
	හි - හි	µg/L	20	0.15	<20	<20	S	60	100	S	<20	<20	S	<20	<20	S	470	480	S
	C10 - C14	µg/L	50	0.26	<50	<50	S	440	500	S	<50	<50	S	<50	<50	S	2960	760	٥
Н	C15 - C28	µg/L	100	100	280	300	-	1590	1570	S	<100	<100	S	150	330	-	1560	340	٥
	C29-C36	µg/L	50	<100	<50	<50	s	140	<50	0	70	<50	0	110	<50	0	200	<50	٥
	+C10 - C36 (Sum of total)	hg/L	50	1260	280 - 330	300 - 350	0	2170	2070 - 2095	s	70 - 145	<50	0	260 - 285	330 - 380	S	4720	1100 - 1125	٥

Motes: 1. S. Stable (with sight increase or decrease in concentration) 1. S. Stable (with sight increase or decrease or doer higher from the baseline concentrations for heavy met 2. I - becrease (based on one magniture of order lower from the baseline concentrations for heavy mu 3. D - becrease (based on one magniture of order lower from the baseline concentrations for heavy mu 3.

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			Field_ID	GW43D	GW43	Trend	GW44D	GW44	Trend
			Sampled_Date- Time	20/04/2011	24/06/2013		20/04/2011	25/06/2013	
Chem Group	ChemName	Units	EQL						
	Benzene	na/L	0.5	ţ,	4	S	1350	1120	S
	Ethylbenzene	hg/L	0.5	2	2	S	46	36	s
	Toluene	hg/L	0.5	12	2	٥	712	455	s
	Total BTEX	mg/L	0.001	0.012			2.54		
MAH	Xylene (m & p)	hg/L	1	2	2	S	285	185	S
	Xylene (o)	hg/L	0.5	2	2	S	150	112	S
	Xylene Total	hg/L	2	2	<4	S	435	297	s
	1,2,4-trimethvlbenzene	na/L	0.5	55	<5	S	49	30	S
	Naphthalene	hg/L	0.2	¢	<7	S	142 - 776	572	S
	Ammonia as N	mg/L	0.01	4.11	1.33		1,190	286	۵
	Chloride	mg/L	+	9860	9670	S	450	1220	-
	Cvanide (Free)	ma/L	0.004	<0.004			0.186		
	Cvanide Total	mg/L	0.004	<0.004	<0.004	S	3.98	0.75	0
	Fluoride	mg/L	0.1	0.3	0.4	s S	0.6	0.5	S
	Nitrate (as N)	ma/L	0.01	0.01	<0.01	S	0.03	<0.01	0
Ionic Balance	Nitrite (as N)	mg/L	0,003	<0.01	<0.01	S	0,03	<0.01	
	pH (Lab)	pH Units	0.01	6.75	5.82	s S	6.72	6.48	s S
	Reactive Phosphonis as P	ma/l	0.01	0.03	0.08	o v.	<0.01	<0.01	o v
	Sodium (Filtered)	ma/L	1	5140	4950	00	594	806	o v
	Sulphate	mg/L	-	1090			5020		
	Calcium (Filtered)	ma/L	+	427	433	S	399	468	S
	TDS	mg/L	5	19,400	18,200	S	8860	9310	S
	Aluminum (Filtered)	mg/L	0.01	<0.01	<0.01	S	<0.01	<0.01	S
	Arsenic (Filtered)	mg/L	0.001	0.002	0.003	s	0.038	0.103	s
	Boron (Filtered)	mg/L	0.05	1.14	0.99	S	1.02	0.78	S
	Cadmium (Filtered)	mg/L	0.0001	0.0025	0.0007	D	<0.0001	0.0004	S
	Chromium (hexavalent) (Filtered)	mg/L	0.01	<0.01	-		<0.01		
	Cobalt (Filtered)	mg/L	0.001	0.075	0.06	S	0.051	0.028	S
	Copper (Filtered)	mg/L	0.001	0.007	0.006	S	0.009	0.01	s
Heater Motole	Iron (Fittered)	mg/L	0.05	0.4	0.26	S	11.1	49.4	s
LINGAY MINUTARS	Lead (Filtered)	mg/L	0.001	<0.001	0.001	S	<0.001	0.002	S
	Magnesium (Filtered)	mg/L	1	694	638	S	169	420	s
	Manganese (Filtered)	mg/L	0.001	7.63	6.69	S	10.5	19.8	S
	Mercury (Filtered)	mg/L	0.0001	<0.0001			<0.0001		
	Nickel (Filtered)	mg/L	0.001	0.067	0.062	S	0.072	0.064	S
	Potassium (Filtered)	mg/L	1	212	175	S	48	61	s
	Selenium (Filtered)	mg/L	0.001	<0.01	<0.01	S	0.01	0.01	s
	Zinc (Filtered)	mg/L	0.001	0.016	0.048	S	0.032	0.035	S
	C10-C16	µg/L	50	<100	<100	S	230000	81900	٥
TRH	C16-C34	µg/L	100	330	<100	D	25000	12400	٥
	C34-C40	μg/L	100	150	<100	٥	710	<100	٥
	හි - හි	µg/L	20	<20	<20	S	3380	1930	S
	C10 - C14	hg/L	50	<50	<50	S	251,000	98,300	٥
Н	C15 - C28	μg/L	100	180	<100	۵	32,200	16,600	٥
	C29-C36	µg/L	50	210	<50	۵	1770	680	٥
	+C10 - C36 (Sum of total)	μg/L	50	390 - 415	<50	Ω	285,000	115,600 - 116,000	٥
lates.									

TABLE T6: SUMMARY OF GROUNDWATER TREND ASSESSMENT

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Notes: 1.5. Stable (with sight increase of decrease in concentration) 1.5. Increase (pased on owingingture of order hower from the baseline concentrations for heavy met 2.0 - Decrease (based on one magniture of order tower from the baseline concentrations for heavy m 3.0 - Decrease (based on one magniture of order tower from the baseline concentrations for heavy m



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7 \[\black]	 <2 <3 <40 <16.3 <16.3 <16.3 <16.3 <16.3 <10.14 <0.141 <0.141<!--</th--><th></th><th>0005 0005 4 4 4 4 4 4 4 125 6 125 125 125 125 125 125 125 125</th><th><1 <2 <0.004 0.005 <0.003 <2 <2 <2 <0.003 <2 <2 <2 <0.003 <2 <0.01 <2 <0.03 <2 <0.01 <2 <0.02 <2 <0.01 <12 <0.01 11 <0.01 12 <0.01 12 <0.01 12 <0.01 13 <0.01 13 <0.02 210 <0.01 13 <0.02 210 <0.01 13 <0.02 03 <0.03 03 <0.03 <t03< td=""> <0.03 03</t03<></th><th>S -(1 -(2) S -(100.4) 0.005 S -(100.4) -(2) S -(100.7) -(2) S -(200.7) -(2) S -(2) -(2)</th><th>< 2 S < -1 < 2 < 2 S < -0.04 0.005 < 2 S < -0.04 < -2 < 4 S < -0.01 < -1 < 4 S < -0.01 < -1 < 11 S < -0.01 < -1 < 11 S < -0.01 < -1 < 11 S -0.01 -0.01 < 11 S -0.01 -0.01 < 100 -0.01 -0.01 -0.01 < 0.01 -0.01 -0.01 $-0.$</th><th>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</th><th>< <1 $<$ /th><th>0.6 <1</th> -2 -2 5 -10.04 20 0.001 -0.001 -2 5 -0.004 0.005 1 -2 -2 5 -0.004 0.005 2 -1 -2 5 -0.004 0.005 0.5 -1 -2 5 -0.004 0.005 0.5 -1 -2 5 -0.004 0.005 0.6 -1 -2 5 -0.004 -2 -2 0.6 -1 -2 -4 5 -0.004 -2 -2 0.6 -1 -2 -2 -2 5 -0.004 -2 -2 0.6 -1 -2 -2 -2 5 -2 <td< th=""></td<>		0005 0005 4 4 4 4 4 4 4 125 6 125 125 125 125 125 125 125 125	<1 <2 <0.004 0.005 <0.003 <2 <2 <2 <0.003 <2 <2 <2 <0.003 <2 <0.01 <2 <0.03 <2 <0.01 <2 <0.02 <2 <0.01 <12 <0.01 11 <0.01 12 <0.01 12 <0.01 12 <0.01 13 <0.01 13 <0.02 210 <0.01 13 <0.02 210 <0.01 13 <0.02 03 <0.03 03 <0.03 <t03< td=""> <0.03 03</t03<>	S -(1 -(2) S -(100.4) 0.005 S -(100.4) -(2) S -(100.7) -(2) S -(200.7) -(2) S -(2) -(2)	< 2 S < -1 < 2 < 2 S < -0.04 0.005 < 2 S < -0.04 < -2 < 4 S < -0.01 < -1 < 4 S < -0.01 < -1 < 11 S < -0.01 < -1 < 11 S < -0.01 < -1 < 11 S -0.01 -0.01 < 11 S -0.01 -0.01 < 100 -0.01 -0.01 -0.01 < 0.01 -0.01 -0.01 -0.01 < 0.01 -0.01 -0.01 -0.01 < 0.01 -0.01 -0.01 -0.01 < 0.01 -0.01 -0.01 -0.01 < 0.01 -0.01 -0.01 $-0.$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	< <1 $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$	0.6 <1
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S 7,30	936		<0.01 0.318	- <0.01 0.032 0.318 0.75 0.83	S - <0.01 S 0.032 0.318 S 0.75 0.83	<0.01 S - <0.01 0.002 S 0.032 0.318	<0.01 <0.01 S - <0.01 0.002 0.002 S 0.032 0.318	· <0.01 <0.01 S · <0.01 0.004 0.002 0.002 S 0.032 0.318	0.01 - <-0.01 <-0.01 <-0.01 S0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01 <-0.01
م	<0.01		0.318	0.032 0.318	S 0.032 0.318 S 0.75 0.83	0.002 S 0.032 0.318	0.002 0.002 S 0.032 0.318	0.004 0.002 0.002 S 0.032 0.318	0.001 0.004 0.002 0.002 S 0.032 0.318
- 0.0	1.39			0.0	000	1 81 C 0.75 0.02	1 E4 1 E4 C D2	12 1.64 1.64 C 022	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0:0 S	0.0004	-	<0.001	100010> 1.0010>	S <0.001 <0.001	 <0.0001 S <0.001 <0.001 	<0.001 <0.001 S <0.001 <0.001 <0.001	<0.0002	0.0001 <0.0002 <0.0001 <0.0001 S <0.001 <0.0001
			<0.01	<0.01	- <0.01	- < <0.01	<0.01 - <0.01	<0.01 - <0.01 <0.01	0.01 <0.01 - <0.01 <0.01
s 0.0	0.00 0.000		<0.001 20.001	<0.01 <0.01	s <0.01 <0.001	 <0.001 /ul>	 <0.001 < <0.001 <0.001 S <0.001 S<!--</td--><td><0.01 <0.001 <0.001 <0.001 S <0.001 <0.001 </td><td>0.001 <0.001 <0.</td>	<0.01 <0.001 <0.001 <0.001 S <0.001 <0.001	0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.
	1.26		0.06	0.06	S 0.06	 <0.05 S 0.06 	<0.05 <0.05 S	<0.05	0.05 <0.05 S 0.06
S <0.0	0.011		<0.001	<0.01 <0.001	S <0.01 <0.001	<0.001 S <0.01 <0.001	<0.001 <0.001 S <0.01 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.00	<0.005 <0.001 <0.001 S <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.0	0.001 <0.005 <0.001 <0.001 S <0.001 <0.001
0 30	0.467		63 0.176	66 63 0.1 0.176	D 66 63	A4 D 66 63 03	51 44 D 66 63 63	90 51 44 D 66 63 03	1 90 51 44 D 66 63
s 0.0	-	-	<0.0001	<0.001 <0.0001	 <0.001 <0.001 	- <0.001 <0.001	<0.001	 <0.001 /ul>	
S 0.0	0.027		0.002	0.02 0.002	S 0.02 0.002	0.025 S 0.02 0.002	0.004 0.025 S 0.02 0.002	0.088 0.004 0.025 S 0.02 0.002	0.001 0.088 0.004 0.025 S 0.02 0.002
S 18(35		30	38 30	S 38 30	22 S 38 30	17 22 S 38 30	36 17 22 S 38 30	1 36 17 22 S 38 30
S 0.01	< 0.01		< 0.01	0.004 <0.01	S 0.004 <0.01	<0.01 S 0.004 <0.01	<0.01 <0.01 S 0.004 <0.01	<0.001 <0.01 <0.01 <0.01	0.001 <0.001 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.004 <0.01
S 0.0	0.018		0.006	0.03 0.006	S 0.03 0.006	0.021 S 0.03 0.006	0.01 0.021 S 0.03 0.006	0.006 0.01 0.021 S 0.03 0.006	0.001 0.006 0.01 0.021 S 0.03 0.006
S	<100		<100	<100	S <100	<100 S <100	<100 <100 S <100	<100 <100 S <	50 <100 <100 S <100 S
	180		<100	<100	S <100	<100 S <100	<100 <100 S	<100 <100 S	100 <100 <100 <100 S <100
s	<100	1	<100	<100	S <100	<100 S <100	<100 <100 S <100	<100 <100 S <100	100 <100 <100 S <100
<41	70	ı I	<20	<40 <20	S <40 <20	<20 S <40 <20	<20 <20 S <40 <20	<40 <20 <20 S <40 <20	20 <40 <20 <20 S <40 <20
S 44	<50	۱I	<50	<40 <50	S <40 <50	<50 S <40 <50	<50 <50 S <40 <50	<40 <50 <50 S <40 <50 <50 <50 <50 <50 <50 <50 <50 <50 <5	50 <40 <50 <50 <40 <50
-1	120	1	<100	<100 <100	S <100 <100	<100 S <100 <100 <100	<100 <100 S <100 <100 <100 <100 <100 <10	<100 <100 <100 S <100 S <100 <100 <100 <	100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <100 <th<< td=""></th<<>
S <10	<50	1	<50	<100 <50	S <100 <50	<50 S <100 <50	<50 <50 S <100 <50	<100 <50 <50 S <100 <50	50 <100 <50 <50 S <100 <50
	120 - 1/0		<50	<240 <50	s <240 <50	 <b< td=""><td> <br <="" td=""/><td> <240 <50 <50 S <240 <50 </td><td>50 <50 S <240 <50 S <240 <50</td></td></b<>	 <td> <240 <50 <50 S <240 <50 </td> <td>50 <50 S <240 <50 S <240 <50</td>	 <240 <50 <50 S <240 <50 	50 <50 S <240 <50 S <240 <50

Notes: 1. Stable (with sight increase or decrease in concentration) 1. Stable (with sight increase or decrease in concentrations for hardy net 2. 1 - Increase (based on one magniture of order higher from the baseline concentrations for heavy million 3. D - Decrease (based on one magniture of order lower from the baseline concentrations for heavy million)

			1 101-1	DCAAD	GW3b	GW36	F
			Sampled_Date- Time	10-May-07	20/04/2011	27/06/2013	
Chem_Group	ChemName	Units	EQL				
	Benzene	hg/L	0.5	4	4	4	
	Ethylbenzene	hg/L	0.5	4	⊲2	\$	
	Toluene	h9/L	0.5	v	<2	2	
	Total BTEX	mg/L	0.001	<0.004	<0.001		
MAH	Xylene (m & p)	hg/L	+		<2	₽	
	Xylene (o)	h9/L	0.5		<2	₽	
	Xylene Total	h9/L	2	Ŷ	⊲2	44	
	1,2,4-trimethylbenzene	h9/L	0.5	4	-55	€	
	Naphthalene	1/6rl	0.2	<1	<1	L>	
	Ammonia as N	mg/L	0.01	<0.1	3.76	<.01	
	Chloride	mg/L	+	1400	1320	1040	
	Cyanide (Free)	mg/L	0.004		<0.004		
	Cyanide Total	mg/L	0.004	0.039	0.053	0.053	
	Fluoride	mg/L	0.1		1.9	e	
	Nitrate (as N)	mg/L	0.01	1.9	2.77	3.03	
Ionic Balance	Nitrite (as N)	mg/L	0.003	90:0	0.08	0.1	
	pH (Lab)	pH_Units	0.01	7.8	7.08	7.13	
	Reactive Phosphorus as P	mg/L	0.01		<0.01	< 0.01	
	Sodium (Filtered)	mg/L	1	880	931	854	
	Sulphate	mg/L	1	560	440		
	Calcium (Filtered)	mg/L	1	140	93	80	
	TDS	mg/L	5	3,700	3400	3060	
	Aluminum (Filtered)	mg/L	0.01		<0.01	0.1	
	Arsenic (Filtered)	mg/L	0.001	0.004	0.025	0.067	
	Boron (Filtered)	mg/L	0.05	1.5	1.3	1.62	
	Cadmium (Filtered)	mg/L	0.0001	<0.001	<0.0001	0.0004	
	Chromium (hexavalent) (Filtered)	mg/L	0.01		<0.01		
	Cobalt (Filtered)	mg/L	0.001	<0.01	0.002	0.002	
	Copper (Filtered)	mg/L	0.001	<0.01	0.004	0.004	
Hostor Motale	Iron (Filtered)	mg/L	0.05		<0.05	0.49	
LING VI INING LAIS	Lead (Filtered)	mg/L	0.001	<0.01	<0.001	0.002	
	Magnesium (Fittered)	mg/L	1	130	113	66	
	Manganese (Filtered)	mg/L	0.001	0.11	0.241	0.242	
	Mercury (Fittered)	mg/L	0.0001	<0.001	0.0002		
	Nickel (Filtered)	mg/L	0.001	<0.01	0.005	0.054	
	Potassium (Filtered)	mg/L	1	35	35	34	
	Selenium (Filtered)	mg/L	0.001	0.011	<0.01	< 0.01	
	Zinc (Filtered)	mg/L	0.001	0.01	0.009	0.018	
	C10-C16	µg/L	50		<100	<100	
TRH	C16-C34	µg/L	100		<100	<100	

TABLE T6: SUMMARY OF GROUNDWATER TREND ASSESSMENT

<100
 <50
 <50 <50 <50</br> <100

<40
 <40
 <100
 <100
 <240

нд/Г рд/Г рд/Г µg/L

C10 - C14 C15 - C28 C29-C36 +C10 - C36 (Sum of total)

НЫ

001 50 <u>100</u> Note: 1. Stable (with slight indrease of decrease in concentration) 1. Increase (based on ore magniture of order tower from the baseline concentrations for heavy me) 2. I. Decrease (based on one magniture of order tower from the baseline concentrations for heavy m

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			FIEIQ_IU	GW/	GWr	GWU	I rena	GWB	GWB	GWUS	I renu	07MG	GW20	GW2b	I rena	GW2/	12MS	I rena
			Sampled_Date- Time	14-Jun-06	2/05/2011	26/06/2013		15-Jun-06	19/04/2011	25/06/2013		26-Sep-06	2/05/2011	26/06/2013		27-Sep-06	20/04/2011	
Chem_Group	ChemName	Units	EQL															
	Benzene	hg/L	0.5	Ŷ	4	Ł	S	31	13	15	S	4	4	4	S	ŗ	4	S
	Ethylbenzene	hg/L	0.5	v	2	4	S	2	\$	2	٥	4	2	8	S	Ŷ	8	S
	Toluene	hg/L	0.5	2	2	2	s	5	4	2	0	2	\$	2	S	۲	₽	S
	Total BTEX	mg/L	0.001	0.002	< 0.001		S	0.046	0.021		٥	<0.004	<0.001		S	<0.004	<0.001	S
MAH	Xylene (m & p)	hg/L	+		2	8	S		2	2	۵		2	₽	s		7	s
	Xylene (o)	hg/L	0.5		2	8	S		2	2	۵		2	₽	s		7	s
	Xvlene Total	ng/L	2	<0.001	₽	4	S	8	4	44	0	ŕ	V	4	S	<0.001	8	S
	1.2.4-trimethvlbenzene	no/L	0.5	v	5	ŝ	o v	- 2	Ş	5	s S	~	5	\$	S	v	\$	S
	Naphthalene	uq/L	0.2	v	<5 - 9.1	-7	s S	213	14.2 - 18	12	0	~	~	12	S	<0.001	~	S
	Ammonia as N	mg/L	0.01	1,600	112	105	•	320	318	1,150	-	0.6	0.96	1.29	-	<0.1	9.0	S
	Chloride	mg/L	+	250	212	350	S	600	290	248	0	500	564	919	S	1500	1100	S
	Cyanide (Free)	mg/L	0.004		<0.004				<0.004				<0.004				<0.004	
	Cyanide Total	mg/L	0.004	0.083	0.047	0.027	0	0.029	0.014	0.029	S	0.009	0.005	<0.004	S	<0.005	0.004	S
	Fluoride	mg/L	0.1		1.5	2	S		0.2	0.3	S		0.6	0.7	S		-	
	Nitrate (as N)	mg/L	0.01	0.76	<0.01	1.73	S	0.23	0.24	0.28	S	0.03	0.3	0.04	S	0.31	10.2	-
Ionic Balance	Nitrite (as N)	mg/L	0.003	0.18	0.01	0.1	s	0.2	0.05	<0.01	0	0.02	0.01	<0.01	S	0.01	0.03	S
	pH (Lab)	pH_Units	0.01	7.3	6.52	6.97	S	7.4	6.27	5.96	S	7.3	6.9	6.72	S	7.7	7.3	S
	Reactive Phosphorus as P	mg/L	0.01		<0.01	<0.01	S		< 0.01	<0.01	S		<0.01	0.04	S		0.04	
	Sodium (Filtered)	mg/L	-	96	277	276	S	210	173	148	S	380	469	472	S	1100	941	S
	Sulphate	mg/L	+	690	225		٥	1800	1510		S	220	306		S	490	711	s
	Calcium (Fittered)	mg/L	-	100	47	52	s	160	130	126	S	88	86	94	S	110	73	S
	TDS	mg/L	5	1100	1640	1460	S	2500	2740	2360	S	1,400	1740	2300	S	3,600	3610	S
	Aluminum (Filtered)	mg/L	0.01		< 0.01	<0.01	S		<0.01	<0.01	S		<0.01	<0.01	S		<0.01	
	Arsenic (Filtered)	mg/L	0.001	0.074	0.084	0.092	s	0.035	0.012	0.179	s	0.008	0.038	0.072	s	0.002	0.003	s
	Boron (Filtered)	mg/L	0.05	1.1	0.84	0.95	s	1.4	0.91	0.8	s	0.27	0.3	0.47	s	0.66	0.65	s
	Cadmium (Filtered)	mg/L	0.0001	<0.0002	<0.0001	0.0004	S	<0.0002	< 0.0001	0.0002	S	< 0.0002	<0.0001	0.0005	S	<0.0002	<0.0001	S
	Chromium (hexavalent) (Filtered)	mg/L	0.01		< 0.01				<0.01				< 0.01				<0.01	
	Cobalt (Filtered)	mg/L	0.001	< 0.01	< 0.001	0.001	s	0.013	0.006	0.009	s	0.029	0.016	0.034	s	<0.01	0.003	s
	Copper (Fittered)	mg/L	0.001	<0.001	< 0.001	0.002	S	0.001	0.003	0.002	S	0.001	<0.001	0.003	S	0.001	0.004	S
Hostor Motole	Iron (Filtered)	mg/L	0.05		0.12	0.87	S		3.5	36.3	_		<0.05	1.69	_		<0.05	
Inday motors	Lead (Filtered)	mg/L	0.001	<0.005	<0.001	<0.001	S	<0.005	0.001	0.002	S	<0.005	<0.001	<0.001	S	<0.005	<0.001	S
	Magnesium (Filtered)	mg/L	-	78	35	43	S	55	50	44	S	62	69	90	S	88	75	S
	Manganese (Fittered)	mg/L	0.001	0.35	0.138	0.178	S	2	1.35	1.32	S	3.2	1.97	3.46	S	0.26	0.231	S
	Mercury (Fittered)	mg/L	0.0001	<0.0001	<0.0001		S	<0.0001	< 0.0001			<0.0001	< 0.0001			0.0002	0.0004	S
	Nickel (Filtered)	mg/L	0.001	0.13	0.007	0.05	S	0.12	0.066	0.1	S	0.023	0.009	0.044	S	0.057	0.023	S
	Potassium (Filtered)	mg/L	+	14	8	10	S	13	8	10	S	8.6	8	8	S	13	10	S
	Selenium (Filtered)	mg/L	0.001	<0.001	< 0.01	<0.01	S	0.0042	<0.01	<0.01	S	0.007	<0.01	<0.01	S	0.008	<0.01	S
	Zinc (Filtered)	mg/L	0.001	<0.005	0.026	0.022	S	0.19	0.052	0.137	S	0.041	<0.005	0.05	S	0.018	0.019	S
	C10-C16	µg/L	50		<100	<100	S		680	460	S		<100	<100	S		<100	
TRH	C16-C34	µg/L	100		230	490	-		980	740	S		210	<100	٥		380	
	C34-C40	µg/L	100		<100	<100	S		<100	<100	S		<100	<100	S		100	
	C6 - C9	µg/L	20	<40	<20	<20	S	<20	20	<20	S	<40	<20	<20	S	<40	<20	S
	C10 - C14	µg/L	50	<40	<50	<50	S	480	510	230	S	<40	<50	<50	S	<40	<50	S
трн	C15 - C28	hg/L	100	300	220	450	s	300	1110	930	s	<100	170	<100	s	<100	280	_
	C29-C36	hg/L	50	<100	09 200 - 205	110 FRO FDF	o o	<200	1710	<50 1160 - 1105	v v	<100	80 260 - 276	<20 150	v v	<100	190 470 - 405	
	+CI0 - C30 (2011 01 (001)	hg/L	00	000	CDC - 007	coc - 00c	0	000	21.7	C011 - D011	0	047	617 - 007	057	0	047	0.64 - 0.14	-

Notes: 1.5. Stable (with sight increase or decrease in concentration) 1.5. Stable (with sight increase) of the magniture of order higher from the baseline concentrations for heavy m 2.1. - Decrease (based on one magniture of order higher from the baseline concentrations for heavy m



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			LIBIG_ID	GW20	GW20	OVAU	- Lehn	GW23	GW23	GW23	nua I	GW3U	GW30	GW3U	I renu	GW3/	GW5/	ILEUG
			Sampled_Date- Time	27-Sep-06	19/04/2011	25/06/2013		27-Sep-06	18/04/2011	26/06/2013		26-Sep-06	19/04/2011	26/06/2013		19/04/2011	25/06/2013	
Chem_Group	ChemName	Units	EQL															
	Benzene	no/L	0.5	ŕ	v	ŕ	S	Ý	۲,	ŕ	S	<0.001	ŗ,	4	S	42	38	S
	Ethylbenzene	hg/L	0.5	4	8	8	s	ŗ	8	8	s	< 0.001	8	8	s	\$	8	S
	Toluene	hg/L	0.5	4	2	8	S	۲	\$	8	S	< 0.001	8	\$	S	12	11	S
	Total BTEX	mg/L	0.001	<0.004	<0.001		s	<0.004	<0.001		S	<0.004	<0.001			0.062		
MAH	Xylene (m & p)	h9/L	+		\$	2	s		2	\$	S		2	2	s	5	ę	S
	Xylene (o)	hg/L	0.5		<2	<2	s		<2	<2	s		<2	<2	s	3	2	S
	Xylene Total	hg/L	2	<1	2	<4	s	< 0.001	<2	<4	s	< 0.001	<2	<4	S	8	5	S
	1,2,4-trimethylbenzene	hg/L	0.5	<1	<5	<5	s	< 0.001	<5	<5	s	< 0.001	<5	<5	S	<5	<5	S
	Naphthalene	hg/L	0.2	~	4	<7	S	< 0.001	4	<7	S	<0.001	4	<7	s	27.8 - 40	27	S
	Ammonia as N	mg/L	0.01	40	76	85	-	€0.1	0.1	0.05	S	<0.1	0.44	0.11	s	0.358	0.290	S
	Chloride	mg/L	+	220	332	302	S	810	735	725	S	1100	1020	1000	s	154	289	S
	Cyanide (Free)	mg/L	0.004		<0.004				<0.004				<0.004			<0.004		
	Cyanide Total	mg/L	0.004	0.044	0.033	0.016	0	< 0.005	<0.004	<0.004	s	0.008	<0.004	<0.004	S	0.39	0.103	D
	Fluoride	mg/L	0.1		1.4	1.8	s		0.8	1	s		1.6	1.9	S	1.1	1.3	S
	Nitrate (as N)	mg/L	0.01	2.9	< 0.01	0.01	0	0.38	14.2	16.1	S	3.1	4.49	3.74	S	0.47	0.17	D
Ionic Balance	Nitrite (as N)	mg/L	0.003	<0.01	0.01	<0.01	S	<0.01	0.09	0.06	S	0.13	0.15	0.08	S	0.44	0.07	٥
	pH (Lab)	pH_Units	0.01	7.7	7.65	7.18	s	7.5	7.22	6.94	S	7.4	7.37	5.82	s	7.06	6.98	S
	Reactive Phosphorus as P	mg/L	0.01		< 0.01	<0.01	S		<0.01	0.03	S		<0.01	<0.01	S	<0.01	<0.01	S
	Sodium (Filtered)	mg/L	+	150	351	251	S	820	602	705	S	890	733	200	S	120	91	S
	Sulphate	mg/L	+	48	167		_	440	353			280	573			1060		
	Calcium (Fittered)	mg/L	+	45	30	33	S	75	57	69	S	100	88	84	S	67	53	S
	TDS	mg/L	5	710	1540	1180	s	2,200	2450	2280	s	2,300	3050	2560	S	2260	2080	S
	Aluminum (Filtered)	mg/L	0.01		<0.01	< 0.01	s		<0.01	<0.01	S		0.01	<0.01	S	<0.01	<0.01	S
	Arsenic (Filtered)	mg/L	0.001	0.12	0.189	0.314	s	0.001	0.002	< 0.001	S	0.001	0.064	0.065	S	0.041	0.211	S
	Boron (Filtered)	mg/L	0.05	0.74	0.74	0.81	s	0.42	0.46	0.53	S	0.45	0.44	0.55	S	0.71	0.93	S
	Cadmium (Filtered)	mg/L	0.0001	<0.0002	<0.0001	<0.0001	s	<0.0002	< 0.0001	0.0005	S	<0.0002	<0.0001	0.0005	S	<0.0001	0.0002	S
	Chromium (hexavalent) (Filtered)	mg/L	0.01		< 0.01				< 0.01		100 C		< 0.01		100 C	<0.01		
	Cobalt (Filtered)	mg/L	0.001	<0.01	<0.001	< 0.001	S	<0.01	0.005	0.008	S	<0.01	0.007	0.007	S	0.003	0.004	S
	Copper (Filtered)	mg/L	0.001	<0.001	0.002	< 0.001	s	0.003	0.005	0.004	S	0.006	0.003	0.003	S	0.002	0.001	S
Hostor Motale	Iron (Filtered)	mg/L	0.05		<0.05	2.2	-		<0.05	<0.05	S		<0.05	0.71	_	0.23	7.1	S
וופמאל ואפומוס	Lead (Filtered)	mg/L	0.001	<0.005	0.003	<0.001	S	< 0.005	0.002	<0.001	S	0.008	0.01	<0.001	٥	<0.001	<0.001	S
	Magnesium (Filtered)	mg/L	-	26	26	25	s	63	56	65	s	79	83	74	s	37	37	s
	Manganese (Filtered)	mg/L	0.001	0.19	0.17	0.175	S	0.53	0.403	0.449	S	0.47	0.434	0.429	s	0.298	0.236	s
	Mercury (Filtered)	mg/L	0.0001	<0.0001	<0.0001			<0.0001	<0.0001			0.075	<0.0001			<0.0001		
	Nickel (Filtered)	mg/L	0.001	0.061	0.014	0.018	S	0.17	0.008	0.028	۵	0.046	0.005	0.038	s	0.008	0.017	s
	Potassium (Filtered)	mg/L	-	10	9	9	S	7.9	7	6	S	10	7	7	S	6	10	s
	Selenium (Filtered)	mg/L	0.001	0.002	<0.01	<0.01	S	0.004	<0.01	<0.01	S	<0.01	<0.01	<0.01	s	<0.01	<0.01	s
-	Zinc (Filtered)	mg/L	0.001	0.051	<0.005	0.005	S	0.023	0.021	0.02	S	<0.01	0.017	0.088	S	0.01	0.021	S
	C10-C16	µg/L	50		<100	<100	S		<100	<100	S		<100	<100	S	880	610	S
TRH	C16-C34	hg/L	100		<100	170	S		<100	<100	S		<100	<100	s	1110	720	S
	C34-C40	µg/L	100		<100	<100	S		<100	<100	S		<100	<100	S	<100	<100	S
	C6 - C9	hg/L	20	<40	<20	<20	S	<0.04	<20	<20	S	<0.04	<20	<20	S	60	50	S
	C10 - C14	µg/L	50	<40	<50	<50	S	< 0.04	<50	<50	S	0.07	<50	<50	S	610	390	S
ТРН	C15 - C28	µg/L	100	300	<100	160	S	<0.1	<100	<100	S	0.3	<100	<100	S	1330	940	s
	C29-C36	hg/L	50	<100	<50	<50	s	<0.1	<50	<50	s	<0.1	<50	<50	s	60	<50	s
	+C10 - C36 (Sum of total)	hg/L	50	300	<50	160 - 210	s	<0.24	<50	<50	s	0.37	<50	<50	s	2000	1330 - 1355	s
Notes:																		

1.5 - Stable (with sight increase or decrease in concentration)
 2.1 - Increase (based on one magniture of order higher from the baseline concentrations for heavy met
 3. D - Decrease (based on one magniture of order lower from the baseline concentrations for heavy m

					NE Wells	
			Field_ID	GW38	GW38	Trend
			Sampled_Date- Time	19/04/2011	26/06/2013	
Chem_Group	ChemName	Units	EQL			
	Benzene	hg/L	0.5	27	269	-
	Ethylbenzene	hg/L	0.5	2	15	-
	Toluene	hg/L	0.5	10	131	_
	Total BTEX	mg/L	0.001	0.044		•
MAH	Xylene (m & p)	hg/L	1	4	76	_
	Xylene (o)	hg/L	0.5	3	43	_
	Xylene Total	hg/L	2	7	119	_
	1,2,4-trimethylbenzene	hg/L	0.5	<5	16	-
	Naphthalene	1/6rl	0.2	20.6 - 28	134	_
	Ammonia as N	mg/L	0.01	511	449	S
	Chloride	mg/L	+	200	230	S
	Cyanide (Free)	mg/L	0.004	0.01		
	Cyanide Total	mg/L	0.004	0.055	0.16	S
	Fluoride	mg/L	0.1	0.7	1	S
	Nitrate (as N)	mg/L	0.01	0.06	0.01	٥
Ionic Balance	Nitrite (as N)	mg/L	0.003	0.13	0.04	D
	pH (Lab)	pH_Units	0.01	6.88	6.53	s
	Reactive Phosphorus as P	mg/L	0.01	<0.01	<0.01	S
	Sodium (Fittered)	mg/L	1	301	196	S
	Sulphate	mg/L	1	585		
	Calcium (Filtered)	mg/L	1	102	185	S
	TDS	mg/L	5	3770	3440	S
	Aluminum (Filtered)	mg/L	0.01	<0.01	<0.01	s
	Arsenic (Filtered)	mg/L	0.001	0.034	0.365	_
	Boron (Filtered)	mg/L	0.05	0.96	0.91	S
	Cadmium (Filtered)	mg/L	0.0001	<0.0001	<0.0001	s
	Chromium (hexavalent) (Filtered)	mg/L	0.01	<0.01		
	Cobalt (Filtered)	mg/L	0.001	0.002	0.004	s
	Copper (Filtered)	mg/L	0.001	0.003	0.002	s
Hoavy Motals	Iron (Filtered)	mg/L	0.05	<0.05	35.7	_
Inday Motors	Lead (Filtered)	mg/L	0.001	0.004	< 0.001	٥
	Magnesium (Filtered)	mg/L	1	46	111	S
	Manganese (Filtered)	mg/L	0.001	1.08	3.64	S
	Mercury (Filtered)	mg/L	0.0001	<0.0001		
	Nickel (Filtered)	mg/L	0.001	0.283	0.003	٥
	Potassium (Filtered)	mg/L	1	13	19	S
	Selenium (Filtered)	mg/L	0.001	< 0.01	<0.01	S
_	Zinc (Filtered)	mg/L	0.001	0.014	0.013	s
	C10-C16	hg/L	50	3590	8780	-
TRH	C16-C34	hg/L	100	1580	2620	s
	C34-C40	hg/L	100	<100	<100	s
	C6 - C9	hg/L	20	40	530	-
	C10 - C14	hg/L	50	3370	8460	_
Н	C15 - C28	hg/L	100	1850	3370	_
	C29-C36	hg/L	50	130	70	S
-	+C10 - C36 (Sum of total)	hg/L	50	5350	11,900	-

Note: 1. 5. Stable (with slight increase or decrease in concentration) 1. 2. I-increase (pased on one magniture of order byter from the baseline concentrations for heavy met 3. D - Decrease (based on one magniture of order byter from the baseline concentrations for heavy met

210074_supplementary groundwater report



			LIBIG	0440	GWB	GWUB	Irenu	20010	OW IO	GWIG	I LEIM	CW1		I LEUG	2 MAIZ	GWIZ	ILAIK
			Sampled_Date- Time	15-Jun-06	19/04/2011	26/06/2013		16-Jun-06	20/04/2011	27/06/2013		16-Jun-06	20/04/2011		16-Jun-06	19/04/2011	
Chem Group	ChemName	Units	EQL														
-	Benzene	твн	0.5	4	۲.	4	S	۲.	4	4	s	4	7	s	ŗ.	4	S
	Ethylbenzene	hg/L	0.5	4	2	2	s	4	2	8	S	4	8	s	4	8	S
	Toluene	hg/L	0.5	<1	<2	<2	S	<1	~2	2	s	<1	2	S	1	2	S
	Total BTEX	mg/L	0.001	<0.004	<0.001		s	<0.004	<0.001	S		<0.004	<0.001	S	0.001	<0.001	S
MAH	Xylene (m & p)	hg/L	1		<2	<2	s		<2	<2	s		<2	1.00		<2	1
	Xylene (o)	hg/L	0.5		<2	<2	S		<2	<2	s		<2	1.00		<2	1
	Xylene Total	hg/L	2	<0.001	<2	<4	S	<1	<2	<4	S	<1	2	S	<1	2	s
	1,2,4-trimethylbenzene	hg/L	0.5	<1	<5	<5	S	<1	<5	<5	S	<1	<5	S	<0.001	<5	s
	Naphthalene	hg/L	0.2	4	۲	<7	S	4	<1	<7	S	<1	۲.	S	2	4	ľ
	Ammonia as N	mg/L	0.01	<.100	0.52	0.05	S	0.1	0.43	<.01	s	< 0.1	0.04	S	<0.1	< 0.01	s
	Chloride	mg/L	1	56	150	94	s	54	65	24	۵	48	54	s	69	80	S
	Cyanide (Free)	mg/L	0.004		<0.004				<0.004				<0.004			<0.004	1
	Cyanide Total	mg/L	0.004	<0.005	<0.004	<0.004	S	<0.005	<0.004	<0.004	S	0.01	0:00	s	<0.005	<0.004	S
	Fluoride	mg/L	0.1		0.4	0.5	S		<0.1	<0.1	s		<0.1			0.6	1
	Nitrate (as N)	mg/L	0.01	29	21	26.1	S	0.15	< 0.01	0.01	s	0.12	0.02	S	0.13	1.55	-
Ionic Balance	Nitrite (as N)	mg/L	0.003	0.09	0.01	0.03	S	0.05	<0.01	<0.01	٥	<0.01	0.01	S	0.07	<0.01	٥
	pH (Lab)	pH_Units	0.01	8	6.65	6.16	S	6.9	523	3.66	٥	6.2	5.55	S	7.9	6.91	S
	Reactive Phosphorus as P	mg/L	0.01		<0.01	0.02	S		<0.01	<0.01	S		<0.01			<0.01	ľ
	Sodium (Filtered)	mg/L	-	120	168	177	S	180	192	137	S	64	89	S	190	202	S
	Sulphate	mg/L	-	48	54		s	360	303			110	93	s	210	142	S
	Calcium (Filtered)	mg/L	+	4.9	4	4	S	8.5	4	ę	۵	1.8	Ŷ	0	3.3	2	S
	TDS	mg/L	5	530	548	520	s	890	590	680	s	620	288	D	680	546	S
	Aluminum (Filtered)	mg/L	0.01		<0.01	<0.01	S		0.01	0.03	S		0.03			<0.01	
	Arsenic (Filtered)	mg/L	0.001	0.005	0.004	0.011	s	0.006	0.006	0.018	s	0.003	0.002	S	0.006	0.008	s
	Boron (Fittered)	mg/L	0.05	0.68	0.45	0.62	S	0.16	0.18	0.34	S	0.37	0.26	S	0.51	0.36	s
	Cadmium (Filtered)	mg/L	0.0001	0.0003	<0.0001	0.0005	S	<0.0002	<0.0001	0.0003	S	<0.0002	< 0.0001	S	<0.0002	<0.0001	s
	Chromium (hexavalent) (Filtered)	mg/L	0.01		<0.01				<0.01				<0.01			< 0.01	1
	Cobalt (Filtered)	mg/L	0.001	<0.01	<0.001	<0.001	S	<0.01	0.001	0.002	s	< 0.01	<0.001	S	<0.01	< 0.001	S
	Copper (Filtered)	mg/L	0.001	0.002	0.001	0.003	S	0.005	0.007	0.002	S	0.004	0.002	S	0.006	0.005	S
Heavy Metals	Iron (Filtered)	mg/L	0.05		<0.05	<0.05	s		< 0.05	0.96	_		<0.05			<0.05	1
	Lead (Filtered)	mg/L	0.001	<0.005	<0.001	<0.001	s	<0.005	<0.001	<0.001	S	<0.005	<0.001	S	<0.005	<0.001	ω
	Magnesium (Filtered)	mg/L	-	2.4	e	9	S	4.6	m	2	0	0.72	v	0	22	-	٥
	Manganese (Filtered)	mg/L	0.001	0.04	0.007	0.034	s	0.07	0.022	0.017	٥	0.01	0.002	s	0.12	<0.001	0
	Mercury (Fittered)	mg/L	0.0001	<0.0001	0.0001		S	<0.001	0.0002		S	<0.001	0.0002	S	<0.001	<0.0001	S
	Nickel (Filtered)	mg/L	0.001	0.017	0.004	0.054	s	0.098	0.037	0.067	s	0.011	<0.001	0	0.063	0.007	٥
	Potassium (Filtered)	mg/L		3.2	4	4	s	3.1	3	4	s	1.6	-	s	3.6	4	S
	Selenium (Filtered)	mg/L	0.001	0.0018	<0.01	<0.01	S	0.0014	<0.01	<0.01	S	<0.001	<0.01	S	< 0.001	<0.01	S
	Zinc (Filtered)	mg/L	0.001	0.023	0.014	0.036	S	0.33	0.032	0.067	S	0.027	<0.005	٥	< 0.005	<0.005	S
	C10-C16	µg/L	50		<100	<100	S		<100	<100	S		<100			<100	ľ
TRH	C16-C34	hg/L	100		<100	<100	S		130	130	S		670			<100	ľ
	C34-C40	µg/L	100		<100	<100	S		<100	<100	S		120			<100	ľ
	C8 - C9	µg/L	20	<40	<20	<20	S	<100	<20	<20	S	<100	<20	S	<100	<20	S
	C10 - C14	µg/L	50	<40	<50	<50	S	<40	<50	<50	s	<40	<50	S	<40	<50	S
HdT	C15 - C28	µg/L	100	<100	<100	<100	S	<100	<100	<100	S	<100	510	_	<100	<100	S
	C29-C36	μg/L	50	<100	<50	<50	s	<100	60	50	s	<100	260	_	<100	50	S
	+C10 - C36 (Sum of total)	hg/L	50	<240	<50	<50	S	<240	60 - 135	50 - 125	s	<240	770 - 795	-	<240	50 - 125	S

Notes: 1. 5. Stable (with sight increase or decrease in concentration) 2. I-brouses (based on one magniture of order buiet from the baseline concentrations for heavy met 3. D - Decrease (based on one magniture of order buiet from the baseline concentrations for heavy m



Trend

SE Wells

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			Field_ID	GW13	GW13	Trend	GW14	GW14	Trend	GW15	GW15	GW15	Trend	GW16	GW1
			Sampled_Date- Time	19-Jun-06	20/04/2011		19-Jun-06	20/04/2011		20-Jun-06	20/04/2011	27/06/2013		21-Jun-06	Ñ
Chem_Group	ChemName	Units	EQL												
	Benzene	hg/L	0.5	1	2	s	4	2	S	4	Ŷ	Ŷ	s	Ŷ	
	Ethylbenzene	hg/L	0.5	1	2	S	4	2	S	4	2	2	s	۲,	
	Toluene	hg/L	0.5	4	2	s	4	2	S	-	2	2	S	2	
	Total BTEX	mg/L	0.001	<0.004	< 0.001	s	<0.004	< 0.001		0.001	< 0.001		s	<0.004	Ŷ
MAH	Xylene (m & p)	h9/L	+-		2			2	S		2	2	S		
	Xylene (o)	h9/L	0.5		2			2	S		2	2	S		
	Xylene Total	hg/L	2	<0.001	\$	S	-1	\$	S	4	2	4	S	Ŷ	
	1,2,4-trimethylbenzene	hg/L	0.5	1	<5	S	< 0.001	<5	S	-1	-5	€5	S	Ŷ	
	Naphthalene	ng/L	0.2	<1	<.	S	<1	~	s	<1	~	<7	S	~	
	Ammonia as N	mg/L	0.01	0.2	0.07	0	0.5	0.85	S	0.3	0.19	0.16	S	<0.1	Ö
	Chloride	mg/L	+-	37	75	_	21	55		35	,	21	S	15	-
	Cyanide (Free)	mg/L	0.004		<0.004			<0.004			<0.004				<0.0>
	Cyanide Total	mg/L	0.004	0.01	0.008	0	0.013	0.014	S	0.01	0.006	0.004	S	<0.005	<0.0>
	Fluoride	mg/L	0.1		<0.1			<0.1	S		<0.1	<0.1	S		Ş
	Nitrate (as N)	mg/L	0.01	0.04	0.05	S	0.37	0.12	S	0.01	0.06	0.04	S	0.15	0
Ionic Balance	Nitrite (as N)	mg/L	0.003	<0.01	<0.01	s	0.95	<0.01	S	<0.01	<0.01	<0.01	S	<0.01	Ŷ
	pH (Lab)	pH_Units	0.01	6.5	6.25	S	6.8	6.67	S	6.2	6.11	6.11	S	7	7.
	Reactive Phosphorus as P	mg/L	0.01		<0.01			<0.01			<0.01	<0.01	S		Ş
	Sodium (Filtered)	mg/L	1	95	111	s	31	43	s	89	101	82	S	36	7
	Sulphate	mg/L	1	170	126		130	111	s	240	191		s	45	
	Calcium (Filtered)	mg/L	-	6.7	4	S	24	23	S	17	12	12	s	10	
	TDS	mg/L	5	360	406	s	370	368	s	470	364	560	s	310	
	Aluminum (Filtered)	mg/L	0.01		<0.01			<0.01			<0.01	<0.01	S		ò
	Arsenic (Filtered)	mg/L	0.001	0.002	0.003	s	0.004	0.005	s	< 0.001	<0.001	<0.001	s	<0.001	0.0
	Boron (Filtered)	mg/L	0.05	1.6	0.87	s	1.4	0.94	s	1.3	1.02	1.51	S	0.63	0.5
	Cadmium (Filtered)	mg/L	0.0001	<0.0002	<0.0001	s	< 0.0002	<0.0001	s	0.0005	<0.0001	0.0004	S	<0.0002	<0.0>
	Chromium (hexavalent) (Filtered)	mg/L	0.01		< 0.01			<0.01			<0.01				Ş
	Cobalt (Filtered)	mg/L	0.001	< 0.01	<0.001	S	<0.01	0.004	S	<0.01	0.008	0.01	S	<0.01	Ŷ
	Copper (Filtered)	mg/L	0.001	< 0.001	0.002	S	< 0.001	0.001	S	< 0.001	0.002	0.003	S	<0.001	Ŷ
House Metalo	Iron (Filtered)	mg/L	0.05		< 0.05			< 0.05			<0.05	<0.05	s		0
LINGAY ININIAIS	Lead (Filtered)	mg/L	0.001	< 0.005	0.008	s	< 0.005	<0.001	s	< 0.005	0.001	<0.001	S	<0.005	<0.0
	Magnesium (Filtered)	mg/L	1	5.3	4	s	27	27	s	17	12	14	S	8.1	6
	Manganese (Filtered)	mg/L	0.001	0.03	0.014	S	0.08	0.061	s	0.04	0.058	0.102	s	0.03	0.0
	Mercury (Fittered)	mg/L	0.0001	<0.0001	<0.0001	s	<0.0001	<0.0001	s	<0.0001	<0.0001		S	<0.0001	<0.0
	Nickel (Filtered)	mg/L	0.001	0.034	0.003	٥	0.008	0.005	S	0.031	0.01	0.036	s	<0.005	0
	Potassium (Filtered)	mg/L	-	8	10	S	18	22	S	13	13	11	S	6.5	

TABLE T6: SUMMARY OF GROUNDWATER TREND ASSESSMENT

<0.01
 0.045
 0.045
 <100
 <100
 <100
 <20
 <50
 <50
 <50
 <50

<40

<50 <50 <50</br> <20

230 - 280

<240

<100 <40 <100 < - 40

<0.01
 0.016
 0.016
 <100
 <100
 <100
 <20
 <50
 <50
 <50

<0.01
 <0.07
 0.007
 <100
 <100
 <100
 <100
 <50
 <40 <40 <100 <100 <240

<40</td><100</td><100</td><240</td> <40

20 20 30

µg/L µg/L µg/L

ТРН

<0.001

<0.001

<0.001

0.001 50 100 100 20

mg/L µg/L

Selentin (Filtered) Zine ((Filtered) CI0-CI6 CI0-CI6 CI0-CI6 CI0-CI4 CI0-CI4 CI0-CI4 CI0-CI4 CI0-CI4 CI0-CI6 C

TRH

<40 <100 <100 <240

Notes: 1. 5. Stable (with slight increase or decrease in concentration) 1. 1. Increase the and on one magniture of order tower from the baseline concentrations for heavy met 2. 1. Decrease (based on one magniture of order tower from the baseline concentrations for heavy me

210074_8

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			Field_ID	GW25	GW25	GW25	Trend
			Sampled_Date- Time	19-Jun-06	20/04/2011	27/06/2013	
Chem_Group	ChemName	Units	EQL				
	Benzene	ng/L	0.5	ŕ	ŕ	1	S
	Ethylbenzene	hg/L	0.5	4	2	2	s
	Toluene	ua/L	0.5	Ý	\$	\$	S
	Total BTEX	ma/L	0,001	<0.004	<0.001		S
MAH	Xylene (m & p)	µg/L	1		2	2	S
	Xylene (o)	hg/L	0.5		2	<2	s
	Xylene Total	hg/L	2	4	2	44	s
_	1,2,4-trimethylbenzene	hg/L	0.5	4	<5	\$	s
_	Naphthalene	μg/L	0.2	2	<1 - 6	L>	s
	Ammonia as N	mg/L	0.01	7.9	2.11	0.67	٥
	Chloride	mg/L	1	81	100	27	٥
	Cyanide (Free)	mg/L	0.004		<0.004		
_	Cyanide Total	mg/L	0.004	0.01	0.008	0.004	٥
_	Fluoride	mg/L	0.1		<0.1	0.1	s
_	Nitrate (as N)	mg/L	0.01	0.08	0.24	0.01	s
Ionic Balance	Nitrite (as N)	mg/L	0.003	<0.01	<0.01	< 0.01	s
_	pH (Lab)	pH Units	0.01	7.1	6.45	6.49	S
_	Reactive Phosphorus as P	ma/L	0.01		<0.01	<0.01	S
_	Sodium (Filtered)	ma/L	ł	140	132	82	S
	Sulphate	mg/L	1	230	128		S
_	Calcium (Filtered)	ma/L	÷	7.9	12	18	-
	TDS	ma/L	5	550	360	564	S
	Aluminum (Filtered)	ma/L	0.01		<0.01	<0.01	S
	Arsenic (Filtered)	ma/L	0.001	<0.001	0.002	0.034	-
	Boron (Filtered)	ma/L	0.05	1.7		1.38	s,
_	Cadmium (Filtered)	ma/L	0.0001	<0.0002	<0.0001	0.0004	S
_	Chromium (hexavalent) (Filtered)	ma/L	0.01		<0.01		
_	Cobalt (Filtered)	ma/L	0,001	0.018	<0.001	0.002	S
	Copper (Filtered)	mg/L	0.001	<0.001	0.003	0.003	S
	Iron (Filtered)	mg/L	0.05		<0.05	0.33	s
Heavy Metals	Lead (Filtered)	mg/L	0.001	<0.005	<0.001	<0.001	s
	Magnesium (Filtered)	mg/L	1	6.4	8	7	s
	Manganese (Filtered)	mg/L	0.001	0.16	0.014	0.063	s
	Mercury (Fittered)	mg/L	0.0001	<0.0001	<0.0001		s
	Nickel (Filtered)	mg/L	0.001	0.013	0.003	0.066	S
_	Potassium (Filtered)	mg/L	1	13	11	8	s
	Selenium (Filtered)	mg/L	0.001	<0.001	< 0.01	< 0.01	s
	Zinc (Filtered)	mg/L	0.001	0.018	<0.005	0.04	s
	C10-C16	µg/L	50		<100	<100	S
TRH	C16-C34	µ9/L	100		160	<190	S
	C34-C40	µg/L	100		<100	<100	s
	C3 - C3	µg/L	20	<40	<20	<20	s
	C10 - C14	µg/L	50	<40	<50	<50	s
НД	C15 - C28	µg/L	100	<100	120	<100	s
_	C29-C36	µg/L	50	<100	70	<100	S
	+C10 - C36 (Sum of total)	µg/L	50	<240	190 - 215	<50	s

Notes: 1. Stable (with sight increase or decrease in concentration) 1. Stable (with sight increase or one magniture of order higher from the baseline concentrations for heavy m 2. D - Decrease (based on one magniture of order hyper from the baseline concentrations for heavy m

210074



APPENDIX A

GROUNDWATER SAMPLING RECORDS

EARTH SCIENCES EARTH SCIENCES THE KNDW AND THE HDW	1. Nulborne	Comments	- 084 816m70 c.		sul: 7.34 to: 11.07 the	340-					Stuburd Sameel	(CAL)				In Inline flow cells with the following stabilisation criteria on) least daily) and in accordance with the manufacturers specifications
	Site: S	Colour		clev.				******			с э		4				Parameters parameters will be measured ex-stitu a Do when >1ppm (no criteria for<1p) 1 Turbidity EC EC PH N ORP meter will be calibrated as meeded (at intear 2 peint calibrated as meeded (at intear 2 peint calibrated as meeded (at
		Odour		2			-iy										Field Field ±10% ±10% ±10% ±10m ±10m
0	CPP	EC uScm ^{-s}		2323	191952	12937	24272	19153	2474	24148	24165		3				ontainer ylene glass
mple	Client: (Dissolved Oxygen (ppm)		1.59	L.O	21.0	0.52	4.11	4.15	4,17	4.19						Sampling C PI = Polyeth G = Amber (
er Sa		pe mV		110.1	80.5	62.3	61.2	124.7	125.5	1205	19.61						p There
Wate	SPL	Hd		6.45	84.0	6.48	648	hh'S	5.44	いた	Sitle						g device in 10 20 20 20 20 20 20 20 20 20 20 20 20 20
tor	ed By:	Temp C		17.6	17-4	173	1.1	18.4	18.4	18.4	18.4					×	Samplin B = Ballo B = Parto C = Saf S = Suf G = Ga SL = Sur PD = Por G = Grat
	Sampl	Volume Purged (L)		it	21	32	41	18	Pol	111	121	1		-			
	13.	Stickup (m)									4.	•	ं				cce water ek nd m nd water seian >-artesian
	4/01	Water Level (m)		7.39	1.36	7.38	7.59	7.38	7,38	7.38	9.38						Type SW = Surts SWP = Por SWP = Por SWL = Pud GW = Crou GWS = Suft
	Date: 2	Time		12.31	12.34	12.38	12.20	12.50	12.54	1256	10·10						8
	나	Container + Additive															othors 2,
	0: 2100	Type + Depth				ii)											Additives W = no addit X = comc. J Y = NaOH Z = Na ₂ S ₂ C
	N doL	Sample No	(orig	Churt3													Key

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Pages 1 of 1

									1	F.					11	
THE KNDW AND THE HDW	mello.	Comments	Soph	Zeyon.)	supud stained (mp)					C		m)-fine flow cells with the following stabilisation criteria m) east daily) and in accordance with the manufacturers specification of DO)
	Site: SH	Catour	Turna yelley		÷											Parameters parameters will be measured ex-situ i parameters will be measured ex-situ i i Turbidity EC EC PH N ORP N ORP N ORP N ORP N ORP N ORP N ORP N ORP N ORP
, A		Odour	an.						-							Field Field #10% #5%% #10% #10 #10 The T
	der.	EC uScm ⁻¹	OILO	5580	5158	2912	5145	5362	5214		-				1	ontainor Kena Kass
mples	Client:	Dissolved Oxygen (ppm)	1.81	19.0	1.1.1	1.65 5	1.65	1,64	1.66							Sampling C Pi = Polyethy G = Amber g
		be mV	20.2	16.91	527	42.1	42.5	49.5	49.5					3	~	0 ment
	2 A	Hd	69.9	663	6.6)	6.51	6.57	6.55	6:51			۰.	1		2	ng device er bin bimersible pun sa drive is litt stiltve displace b
5	ed By:	CC	p.rl	5.11	17.8	11.6	L'LI	0.7	17.8						1	Samplir B = Ball B = Ball B = Ball S = Spri G D = Spri G = G S = Co S = Co C = Co
	Sampl	Volume Purged (L)	-	7	3	4	5	9	٢							
		Stickup (m)								8						ace water eek m m dite andwater estan b-artesian
	9/51	Water Level (m)	202	6.20	8.22	224	8.55	8.28	8.30	1				3		Type SWC = Cro SWC = Cro SWD = Por SWL = Puc GWA = Art GWA = Art GWA = Art
5	ate: 2	Time	3.31	3.55	3.39	3.44	349	354	339							
	0 00	Container + Additive									1					sitives HNO,
5	001 C:0	Type + Depth			-											Additives W = no ad X = conc. I Y = NaOH Z = Na ₂ S ₃ ¢
2	Job N	Sample No	HIME													Key

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		Z																
ENVIRONMENTAL EARTH SCIENCES		sworks Park / Represent Ma	Comretents	Start 2 sport		Kiolucest 10 I gov			WL stuble				2.9				u in in-line flow cells with the following stabilisation criteria ppm) the stabilisation criteria for the following stabilisation criteria for the following stabilisation of the follow	Pages 1 of 1
2m 70C		p Council Site: Ga	our Colour		deute grey	4. / v	5		" harbid)))		دو د <i>د</i> و	angled a h				Field Parameters Field Parameters will be measured ex-site ±10% Do when >1ppm (no criteria for<1) ±10% Turbidity. ±5% EC ±0.1 pH ±10mV ORP ±10mV ORP The meter will be calibrated as needed ((i.e. at least 2 point calibration for pH, EC	
put ro. 4	amples	Client: Port Dhill	Dissolved EC Od Oxygen uScm ⁻¹ (ppm)	-	1 4.01 3637 144	0 2.64 3680 1214	8 2-53 3424	3 2.71 3374	4 2-95 3328	9 2.98 3304 6	4 2.55 3273	9 2.44 3254 '	rameter - S				Sampling Container PI = Polysthytene G = Amber glass	5 October 2011 Version 9
.34 de	ics for Water S	impled By: \mathcal{KK}	blume Temp pH pe mV urged C (L)	Damp 11	16.16.71-98.	5 17.0 6.78-133	0 16.6 6.76-135.	3 16-6 6-72 -132	f 16.6 6.70 -125	B.5 16.7 6.70 -125.	. O 16.8 6.69-123.	-5-16.7 6.67 -121	Stable pa				Sampling device B Baller P = Piston S = Sping S = Supmersble pump GD = Gas drive GL = Gas lift SL = Suction lift PD = Positive displacement G = Grab	
W 8	al Characterist	ate: 26.6.13 Sa	Time Water Stickup Vo Level (m) Pr (m)	11: 8.29 with		2:17 8 49 40 11.	2.248:45	12:31 8.44	12.37 8.45 6	0.418.45	12:50 8-45 5	12:56					Type SWC = Surface water SWC = Creek SWP = Pond SWP = Pond SWD = Dam SWL = Pondele : GWA = Artesian GWS = Sub-artesian	Antion of the Samples
	old Chemica	No: 210074 D:	Type + Container Depth + Additive))	Additives W = no additives X = conc. HNO ₃ Y = Na ₂ S ₂ O ₃ Z = Na ₂ S ₂ O ₃	
	ιΨ	। २	No No														Key	}

GW39

			200						. 63m								10					1	T -=-
KIM ENVIRONMENTAL EARTH SCIENCES		sworks low K	Comments			Start Lepy	Wh acopping rapidly a lym	We continues to V	paired to cred to 10/00 010	>	tcpu)								it: 52 aus	tu in in-line flow cells with the following stabilisation criteria ppm)		at least daily) and in accordance with the manufacturers specifications 2 and DO)	Pages 1 of 1
Hal WU.7.3		ouncel Site: (d.	Colour		bedow rac.	hind group to black	light sulfine	unic turbid grey	۲ در ۲		al (slower than		ht trubelgiey		¢ i				autolod 21	Field Parameters Field parameters will be measured ex-si ±10% DO when > fppm (no criteria for<1	±10% Turbidity ±5% EC ±0.1 pH ±10mV OPP	The meter will be calibrated as needed ((i.e. at least 2 point calibration for pH, EC	
1 W tot	imples	Client: But Pluting C	Dissolved EC Dodour Oxygen uScm ⁻¹ (Aptm)	mglr	n avoud 14m	3.82 23384 Stu	2.60 27,770 S	2-71 27,861 March	2.93 27,842		hen not purpe		3.15 27,043 14/2	3.26 27,683 "	3.24 22,629 ~	3-30 27 533	3.32 27.504	3-36 27,858	the liked - s	Sampling Container PI = Polyethylene G = Amber glass			5 October 2011 Version 9
	CS TOF VVALEE 26	npled By: ドK	me Temp pH pemV jed C		with paper is	13.9 5.97 -134.2	16.2 5.59 -21.6	5 (4.3 5.57 -30.7	0 16.2 5.56 -66.5		buddy recorders u	inpire 2 top	5 /15.2 S.S.Y -67.4	16.2 5.54 - 85.8	16-55-56-109.7	5 16.5 5.55 -115.b	16.4 5.54 -1206	5 16-4 5.55 -130.6	rauder A	Sampling device B = Bailer P = Piston	S = Spring SP = Submersible pump GD = Gas drive	SL = Suction fift PD = Positive displacement G = Grab	
		e: <i>J</i> 4/b/L3 San	ime Water Stickup Volu Level (m) Purg (L)	9.34 0	30896 0	35 9.32 2	46 7.88 3	2.2 02.01 DEL	· · · · · · · · · · · · · · · · · · ·	12 10.23	22 10.42 WC 51	:24 resume pu	.27/10.50 4.	31 10.74 5	37 11.01 6	HIII.17 [.	-+15 11.30 T	5.49 11-56 7.	12 12.41 21:	Type SWC = Surface water SWC = Creek	SWP = Pond SWD = Dam SWL = Puddle	GWA = Artesian GWS = Sub-artesian GWS = Sub-artesian	ristics for Water Samples
ī	Field Chemica	Job No:21 0074 Dat	Sample Type+ Container T No Depth +Additive '		My (0) G		5	0 23:10	0	10:01\$10:03 10	0	0/	0/	0)	10		<u>)</u>	rif sampling to	at white the the	Key Additives We not additives We conditives	Y = NaOH Z = Na ₂ S ₂ O ₃		MF 90 Field Chemical Characte

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ENVIRONMENTAL EARTH SCIENCES THE KNOW AND THE HOW	arks Aurk	Comments	wt I com.			ductoring bouncery	ameters bouncing our out				com still						he flow cells with the following stabilisation criteria is flow a cells with the following stabilisation criteria	0
GWZZ	p Council Site: Gaswi	dour Colour	540	HIC Slightly great	4 · · · ·	N (00)	ii Doui			4	5 2 8: Sham 21	clearing	clear		sounded.	-	Field Parameters Field Parameters Field parameters will be measured ex-silu in in-lit ±10% DO when >1 ppm (no criteria for<1 ppm) ±10% ED when >1 ppm (no criteria for<1 ppm) ±5% EC ±0.1 pH ±10mV ORP ±10mV ORP	(i.e. at least 2 point calibration for pH, EC and DC
samples	Client: Port Phill	v Dissolved EC O Oxygen uScm ⁻¹ (ppm)		3 1.71 2869 843	2 2.14 1072	7 3.14 1109 .	4 3.63 864 m	0 3.49 1157	2 3.46 870	white recre	ed stat again	.2 3.53 803	.6 3.20 965	.0 3.36 876	.7 3.36 982		Sampling Container FI = Polyethylene G = Amber glass	
WL - 8.57 L - 10.06	ampled By: KK	olume Temp pH pem urged C (L)	**** *********************************	2 14.6 6.48 83.	L'S 15.9 6.43 84.	JS-9 6.40 90.	.2 16.4 6.35 98.4	· 8 16.4 6.34 99.	2 16.5 6.31 98.	ed 2 8 43 A M	reaven indicat	4.5 15.8 6.30 91	5 167 6.3778	3 164 6.34 78	·6 16-5 6.30 79		 Sampling device B Baller P = Pistor P = Subing S P = Submersible pump GD = Gas drive GL = Gas drive GL = Suction fit SL = Suction fit PD = Positive displacement	G = Grab
استامیا ملمار Arph	ate: 25-6-13 Se	Time Water Stickup V Level (m) P (m)	8:00 8.58	8.04 8.61	8.15 8.64	8:21 8 65 2	8.29 8.69 3	8:33 8.77 3	DEWORA 4	Amon Pt.8	8:53 8-70 5low	8:57 1.73	9-02 3.78	q.05 8,82 5	9.09		 Type SWC = Creek SWC = Creek	
Field Chemica	D: DI VOC JC :ON GOL	sample Type + Container No Depth + Additive	1-True														(ey Additives W = no additives X = conc. HNO ₃ Y = Na ₂ S ₂ O ₃ Z = Na ₂ S ₂ O ₃	

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11 6.9670C	FULL ENVIRONMENTAL ENVIRONMENTAL EARTH SCIENCES	usinovics parile	Comments	1-cow				2 cpm - wi skble											situ in in-line flow cells with the following stabilisation criteria <1pm) (at least daily) and in accordance with the manufacturers specifications :C and DO)	
S	depth 10.1	hillin Site: Ga	Colour		turbert yellow	fubiol, yellow	5	dering	alwast clean	1.	clear	L 4	ampled.						 eld Parameters eld parameters will be measured ex-s 0% DO when >1ppm (no criteria for- 0% Turbidity. % EC 1.1 pH 0mV ORP er meter will be calibrated as needed er meter will be calibrated as needed e. at least 2 point calibration for pH, E.	
GW3		7- 4 PA P	EC Boour	1	8, 802 trul	9013 2119ht	13,310 4	hyla part	B,002 112	7,531 MILE	141 8tt't	··· hSt't	ined - S						ontainer Mene Fik 1885 ±11 1885 ±11 190	id Manian Q
	er Samples	Client: /	pe mV Dissolved Oxygen (ppm)		-76.5 1.70 11	-92.8 0.92	-Will 1. 64 1	-109.3 2-00 6	-120,5 2.08	-127.5 2.07 =	-123.5 2.07 7	-1222 2.12	in state						 Sampling C P1 = Polyeth G = Amberg P ment	E October 200
	s for Wate	led By: KK	Temp C	Silaut	16.66.52	5 17-1 6.56	126.69	1-1 675	17.6 6.92	17.6 7.01	17.8 6.95	17.86.92	par ame						Sampling device B = Baller P = Piston S = Spring S = Submersthe pum G = Gas drive G = Gas fift S = Suction fift S = Suction fift P = Positive displacer G = Grab	
	acteristic	3 Samp	Stickup Votume (m) Purged (L)	I pump	1		5	3 2.5	3.0	4	5 6,0	6.5							 urface water Creek Pond Dam Pudde Soundwater Arresian Sub-artesian	
	ical Char	Date: 25/6/(Time Water b Level (m)	26.7 972:01	10:33	10:39 7.03	HO-E SH:01	10:50 7.03	10:50	11:00 7.00	11:11 7.05	11:16 7.03							 Type SWC = S SWC = S SWC = SWL = GWL = GWL = GWL = GWL =	the forther for the forther
	ld Chem	lo: 210074	Type + Container Depth + Additive																 Additives W = no additives X = conc. HNO ₃ Y = NaOH Z = Na ₅ S ₂ O ₃	
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$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	N28 - 10.26m	Site:	Colour	Star	clear	red	10 M C V	1010 - 1010 11	20	*					ametes the				arameters anameters will be measured ex-situ in in-line DO when >1ppm (no criteria for<1ppm) Turbidity. Cubidity. CORP ORP CORP Least 2 point calibration for pH, EC and DO)
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	S A	>	Odour	ì) + 4 (1) S		~			0 0 0 0				。 契 段	1	- (\uparrow		Field P Field p ±10% L ±10% L ±10% L ±10mV ±10mV The me
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $, ples	Client:	ssolved EC xygen uScm ⁻¹ (ppm)		.48 3250	:23 1907	FFFS 25.	1-92 1942	0622 72.	-03 21BC	-08 2266	18 2041	25 2468	S12 22.	32 2182		ントへ		Sampling Container PI = Polyethylene G = Amber glass
CPUID Sampled By: H Date: Z5/6 Sampled By: K Value Time Wolume Time Walling Time Value Time Wolume I Date: Z5/6 Sampled By: K Addition Time Walling Time Walling Time North Time Walling Time North State 12:21 8:09 12:21 8:09 12:52 8:09 12:55 8:07 12:55 8:07 12:56 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:55 8:07 12:56 12:57 <t< td=""><td>tter Sam</td><td>0</td><td>pe mV Di</td><td></td><td>0 1-11-1</td><td>2 -110.7 O</td><td>9 -110.7 0</td><td>c -86.4 0</td><td>1 -83-8 1</td><td>0-91.12</td><td>IO.16- E.</td><td>8 - 73-1 2.</td><td>3-93.72.</td><td>5 -98.7 2.</td><td>7-98.82.</td><td>¢</td><td>×</td><td></td><td>e pump placement</td></t<>	tter Sam	0	pe mV Di		0 1-11-1	2 -110.7 O	9 -110.7 0	c -86.4 0	1 -83-8 1	0-91.12	IO.16- E.	8 - 73-1 2.	3-93.72.	5 -98.7 2.	7-98.82.	¢	×		e pump placement
C C Г C emical Characteristic Samp Volume Volume H Date: 25/6 Samp Volume H Date: 25/6 Samp Volume Additive Time Water Sittekup Volume Additive Time Vater Sittekup Volume (12:51 8.09 2 2 5 5 12:50 8.09 2 1 2 5 5 12:50 8.09 2 1 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5) s for Wa	led By: kk	Temp C		\$\$ 7.0	18.5 6.8	18.6 6-7	18.7 6.13	-18.76.10	0-9 t.81	18.8 S.9	18.9 S-8	18.9 5.8	18.9 S.6	18.8 5.6		57		Sampling device B = Baller P = Piston S = Spring S = Submersibl GD = Gas lift SL = Suction lift PD = Positive dis G = Grab
C C C C C C	7	Samp	Stickup Volume (m) Purged (L)	Q	0.5	4	5.7	2	2.5	<u>()</u>	3.5	4-2	4.5	5	5.5				e water k le . dwater artesian
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$)し ア Charac	: 75/6	ne Water Level (m)	00-8 FJ		31 8.09	35 8.07	408.07	بلاط	50	56 8.09	33	60.2 8	5 8.09	20	A.1			Type SW = Surfac SWC = Cree SWP = Pont SWP = Pont SWL = Pud GW = Gerour GWS = Sub
		n너 Date	Container Tin + Additive	(2)		(2.	/2:	(2)	:21	12.	(2.);/	1:0	1.1	12				ditives HNO3 03
ev Additives v a concel z = Na ₂ S ₂	Field Ch	ob No: -JA	ample Type + No Depth	Brow	-						*					-			ey Additives W = no add X = conc. Y = Na ₂ S ₂ i Z = Na ₂ S ₂ i

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Of the Carte KNOW AND THE HOW	anuorks Paule.	Comments	1 cpm - dropping		lack WR V												situ in in-line flow' cells with the following stabilisation criteria <1ppm) (at least daily) and in accordance with the manufacturers specifications ≣C and DO)
N. T. P.	Willys Site: Qr	Colour	Shules!	dark black/	and signify a		۰. در ۱		a na		1						A Parameters I parameters % D0 when >1ppm (no criteria for- % Turbidity % Turbidity PH PH M' ORP m' ORP meter will be calibrated as needed at least 2 point calibration for PH. E
i had l	P Rut PI	dour Ddour	Strad	. / 21 4	Strong MH	כ	t ı	н	f 1		۲) (۲						Field 103 ±103 ±103 ±100 ±100 1 the
s S	City 0	ec/ uScm-1		8983	11649	11,410	11229	12,401	12,291	12,426	12,470			 			 Container hylene glass
mple	Client: (Dissolved Oxygen (ppm)		0.90	4.90	5.42	5.37	5.29	5.27	5.2b	5.22	٤.					Sampling (PI = Polyett G = Amber
er Sa		pe mV		-78.7	-79.8	-87.2	-72.1	-95.3	-96:4	0.12-	-96.5	Kell					np
⁻ Wate	r. K.K	Hd		6.23	5.95	5.39	15.37	5.95	5.98	10.9	96-01	ک مرا					oling device lailer ston pring Subracsible pur Gas tift Gas tift Suction tift Positive displace Srab
s foi	pled B)	id Temp) (t) ()	17.6	5 17.8	, t1	17.5	S.E	8.tl	Ĕ	r C					 6 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
ristic	Sam	Purge (L)		4	j. <i>Ś</i>	2.6	3	4	4.5			n au		 			
acte	3	Sticku (m)	~						. 0			μa	<u>`</u>				 urface water Creek Pond Dam Puddle Artesian Sub-artesian
har	2(6)	Water Level (m)	2.48	8.70	8.83	26.8	8-93	8.94	8.91	t6.8							 Type SWC = S SWC = S SWC = G SWL = 6 GW = 6 GW = 6
ial C	Date: 2	Time	2:58	3:04	3:10	3:20	2:27	3:39	3:47	3:55	3:59						
Jemic	1 740	Container + Additive															s dditives H H isO3
d CI	lo: 210	Type + Depth								•							Additive W = no = X = conc Y = Na ₂ S Z = Na ₂ S
Fie	V dol	Sample No															Key

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ENVIRONMENTAL EARTH SCIENCES THE KNOW AND THE HOW	elo Gashoules	Comments	Pm.		1				- 3	moled Stablend (ma)	0			,			e flow cells with the following stabilisation criteria by) and in accordance with the manufacturers specifications
25	Site: SH- IM	Colour	sutingery lo	11		2				See							Parameters arrameters will be measured ex-situ in in-lin DO when > topen (no criteria for <tppm) Turbidity CC H r ORP r ORP r will be calibration for pH, EC and DO) least 2 point calibration for pH, EC and DO)</tppm)
70:9.3		Odour	HUND-18-15	~ ~													Field P = 10%5 = 10%5 = 45%5 = 45%5 = 40%1 = 10mV = 10mV = 10mV = 10mV
80 (0	CPP	EC uScm ⁻¹	3555	3553	3548	3530	3524	3561	352>	3532						1	ylene jass
mple;	Client:	Dissolved Oxygen (ppm)	254	1.77	2.82	3.06	3.03	3.08	6.3.18	342			2				PI = Polyeth G = Amberg
r Sa		De mV	P.21-	53	-21.9	-3.9	-98.2	-Styl	-54.0	-54.2						7	out
Nate	Jas	H	· 4.0	5:90	5.78	21.5	5.74	S.75	11:5	5:41						-	device nersible pump drive In on lift on lift bve displacem
for \	d By:	Temp C	19.61	19.0	0.61	0.61	K.A	12.8	18.9	181							Sampling B = Bailer P = Pation S = Spring SP = Subring SP = Gas GL = Gas SL = Sucti PD = Posit
stics	Sample	Volume Purged (L)	0.5	-	1.5	6	2.5	3	3.5	4							5-
cteri	51	Stickup (m)															ce water ek d d die ndwater sian -artesian
nara	2516	Water Level (m)	8.08	8.0	11-8	8-105	8.10	8.10	8.10	8.10				-			Type SWC = Surfa SWP = Pon SWD = Dan SWL = Puch GW = Grou GW = Grou GWS = Sub
al Cl)ate:	Time	3.23	3.27	3.32	5.0	3.842	3.46	400	test	1						
emic	14	Container + Additive					342		3.50	354							40,
d Ch	3100	Type + Depth								-							Additives W = no addi X = conc. H Y = Na ₃ S ₂ O ₁ Z = Na ₃ S ₂ O
Fiel	Job No	Sample No	3008														Key

Pages 1 of 1 1

ENVIRONMENTAL EARTH SCIENCES THE KNOW AND THE HOW	~ mellare.	Comments	Zepu.	- rom		X			*1		Statinical Sugred (mp))					u in in-line flow cells with the following stabilisation criteria ppm) and in accordance with the manufacturers specifications and DO)
20	Site: SH	Colour	clar				a.										4 Parameters barameters will be measured ex-site & DO when >1ppm (no criteria for<1, 6 Turbiolity E C mit ORP mV ORP moter will be calibrated as needed (moter will be calibrated as needed (
9.01		Odour	100	HE HE	4								ş				Field = 109 = 101 =
240 S	CPP.	EC uScm ⁴	Xcog	6386 51	6395	6415	Shcol	6325	(223)	661	60×4						Container shylene r glass
mple	Client:	Dissolved Oxygen (ppm)	0.8.1	0.37	6.82	0.93	c6:0 .	093	0.89	6.91	093						Sampling P1 = Polyo G = Ambe
Gud er Sa		pe mV	-139.8	- 1506	1.2cl-	- 129.8	-126.7	-176.2	-126.7	6911-	126.2	1					dum Demont
Wate	Ser	H	81:9	11.9	640	6.9	6.55	6.55	6.58	6.58	6,60					-5	ing device tion ston ston ston ston ston stores bubmensible bubmen
s for	led By:	Temp C	15,6	17.3	Ē	i-Li	17	64	SIL	たた	P-11					1	Sample Bample Bample Bample Sa
istics	Samp	Volume Purged (L)	2.0	-	5.1	2	LS.	3	35	T	4.5						
acter		Stickup (m)			10	-	100										Irrface water Sreek Jam Jam Vuddie roundwater Rutesian Sub-artesian
hara	2512	Water Level (m)	T.T	7.87	295	6.1	36L	29.7	3,00	8.00	10.8						Type SWC = SU SWC = C SWD = F SWL = P GWA = G GWA = A
cal C	Date:	Time	11.05	00.11	11.15	11.20	11.25	UC-11	30.11	11.38	14-11			-			
hemi	hai	Container + Additive															es additives ic. HNO3 OH S2,03
ld C	10: 21	Type + Depth															Addith W = no X = cor Z = Na Z = Na
Бie	J doL	Sample No	lone														Key

5 October 2011 Version 9

MF 90 Field Chemical Characteristics for Water Samples
Sampled By: Str Client: CA Site: Site: studius Venue Terr PI Perily Venue Et Court Site: studius Venue Terr PI Perily Venue Et Court Colour Colour Colour Colour Colour Colour Colour Succour Succour Colour Colour Colour Colour Succour Succour Succour Succour Succour Colour Succour Succour Succour Colour Succour Colour Succour Succour Succour Colour Succour S	Sello Sampled By: STCL Client: CAR Site: Water (val) Inition Parma Parma Parma Each Ocura Site: Valuer (val) Inition Parma Parma Parma Parma Each Ocura Site: 7:91 1		Comments	٤५.	C: 7.80 TD: 10-225	200m. Wild dupping (298)	Com					(m) prom)				8	ne flow cells with the following stablisation criteria																																																																																																																		
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Sampled By: SEL Client: CM stetup Volume Term Prime EC (iv) N N Prime EC (iv) N N N Prime EC 1 N N N N Prime EC 1 N N N N N Prime 1 N N N N N N 1 N N N N N N 1 N N N N N N 1 N N N N N N 2 N N N <	57b Sampled By: 57 Client: Chient: CPP two mon round round round mon mon mon mon two mon round r print print print cf print mon mon <td< td=""><td></td><td>Odour</td><td></td><td>20V</td><td>NB</td><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1 </td></td<>		Odour		20V	NB	3											1 																																																																																																																		
Sampled By: Str.L Client: Statchue Pungteend C PH Pom Osyage (m) Provide C PH Provide Osyage (m) Provide Provide Provide Provide Provide (m) Provide Provide Provide Provide Provide (m) Provide Provide Provide Provide Provide Provide (m) Provide Provide Provide Provide Provide Provide Provide	351b Sampled By: 5FL Client: weit (m) subue (m) volume (m) permode (m) over (m) weit (m) (m) pugned (m) permode (m) over (m) over (m) weit (m) (m) (m) pugned (m) permode (m) over (m) over (m) n 2 (m) (m) (m) (m) over (m) n 1 <t< td=""><td>CP</td><td>EC uScm⁻¹</td><td></td><td>6806</td><td>7039</td><td>(60)</td><td>6865</td><td>1021</td><td>7332</td><td>7269</td><td>7335</td><td></td><td></td><td></td><td></td><td></td><td>Container</td></t<>	CP	EC uScm ⁻¹		6806	7039	(60)	6865	1021	7332	7269	7335						Container																																																																																																																		
Sampled By: SFL state wowne remp PH Per N state wowne remp PH PH PH nn) D:5 EM PH Per N nn) D:5 EM PH PH nn Proped Toth PH Ph nn Proped For N Ph Ph nn Proped For N Ph Ph nn P:5 P1/6 6:64 180.1 2 P1/6 6:52 183.3 2 2:5 P1/6 6:52 23.3 2 2:5 P1/6 6:52 23.3 2 2:5 P1/6 5:25 240.1 2 2:6 P1/7 5:25 240.1	STID Sampled By: STI Water Statchup (m) Volume (u) Temp PH Permit (m) Puged c PH PH PH PH (m) Puged c PH Tripol PH PH PH 7:95 0:5 [M4 7.15 [M1:b] PH PH PH 7:95 0:5 [M4 7.15 [M1:b] PH PH <td< td=""><td>Client:</td><td>Dissolved Oxygen (ppm)</td><td></td><td>7.54</td><td>58.0</td><td>64-0</td><td>PF-0</td><td>19.0</td><td>3.15</td><td>3.89</td><td>3.82</td><td>•</td><td>a.</td><td></td><td></td><td></td><td>Sampling PI = Polyet G = Amber</td></td<>	Client:	Dissolved Oxygen (ppm)		7.54	58.0	64-0	PF-0	19.0	3.15	3.89	3.82	•	a.				Sampling PI = Polyet G = Amber																																																																																																																		
Sampled By: Str. sttckup Volume Temp PH sttckup Volume Temp PH (m) Purged Temp PH (n) Purged Temp PH (n) Pringed Temp PH (n) Pringed Temp PH 1 11 11 11 15 1 1 11 16 6/6/1 1 1 11 6/6/1 6/6/1 2 1 17 5/2 2/2 3 1 5 5/2 2/2 4 18.0 5/3 2/2 2/2 4 17 5/2 2/2 2/2 5 17 5/2 5/2 2/2 4 18.0 5/3 2/2 2/2 5 17 5/2 5/2 2/2 6 5/2 17 5/2 5/2	J51b Sampled By: Str. Water (m) state state (m) state state (m) state state (m) PM Name (m) provene (m) state state (m) provene (m) remp PH 7:81 7:85 0:5 [byt] 7:15 7:91 1 7:16 6:64 7:31 1:5 7:16 6:52 7:92 7:70 3:5 7:7 5:21 7:90 3:5 7:7 5:25 7:5 7:90 3:5 7:7 5:25 7:5 7:00 3:5 7:7 5:25 7:5 7:00 3:5 7:7 5:25 7:5 7:00 3:5 7:7 5:25 7:5 7:00 3:5 7:7 5:25 7:5 7:00 3:5 7:7 5:25 7:5 7:00 5:5 7:7 5:25 7:5 7:00 5:5 7:5 5:25 5:25		Am od		141.6	1127	1:021	(.181	[83.]	339.4	240.1	239.2						7																																																																																																																		
Sampled By: sttckup volume Tomp (m) Purged c (m) Purged c (m) Purged c (m) Purged c (n) P. Purged c (n) P. P. P. P. P. P.	J51b Sampled By: Water (m) stackup (m) volume (m) Temp (m) Value (m) stackup (m) volume (m) Temp (m) 7:85 0:5 [b4] 7:91 1 11-16 7:93 2.5 17:6 7:88 2.55 17:6 7:90 5:5 17:6 7:90 5:5 17:6 7:70 7:70 4 18:0 7:88 2:5 17:6 7:88 2:55 17:6 7:89 2:55 17:6 7:81 2:60 5:5 8:80 5:5 17:6 7:88 5:5 17:6 7:88 5:5 17:6 7:88 5:5 17:5 8:89 5:5 17:6 8:88 5:5 17:5 8:88 5:5 17:6 8:88 5:5 17:5 8:88 5:5 17:5 <tr tbook<<="" td=""><td>125</td><td>H</td><td></td><td>715</td><td>69.9</td><td>6.61</td><td>49.9</td><td>6.52</td><td>2.21</td><td>5.25</td><td>5,24</td><td></td><td></td><td></td><td></td><td></td><td>g device r n omersible pun s drive s lift</td></tr> <tr><td>Sample Sample Sample Sample Proged (i) (i) (i) (i) (i) (i) (i) (i)</td><td>Total Sample Water Stekup Volume (m) (m) (m) (m) (m) Program (m) (m) Volume (m) (m) Volume (m) (m) Volume (m) (m) Volume (m) (m) (m) 7:0 7:0 2:5 7:90 3:7 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 5:5 3:5 7:90 5:5 3:5 7:90 5:5 5:5 7:90 5:5</td><td>ed By:</td><td>CC</td><td></td><td>1pd</td><td>1.6</td><td>17.6</td><td>921</td><td>1.6</td><td>11.5</td><td>179</td><td>18.0</td><td></td><td></td><td></td><td></td><td></td><td>Samplin B = Balt B = Balt S = Sprit GD = Gi GL = Ga</td></tr> <tr><td>Stickup (m) (m) (m) (m) (m) (m) (m) (m) (m) (m)</td><td>2516 216 Water Steckup Levoid Steckup 7.95 7.91 7.91 7.93 7.91 7.93 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 800 5.004 800 5.004 800 5.004</td><td>Sample</td><td>Volume Purged (L)</td><td></td><td>0.5</td><td>-</td><td>1.5</td><td>2</td><td>2.2</td><td>M</td><td>5.5</td><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td>12516 Water 10001 1.87 1.87 1.87 1.87 1.87 1.87 1.87 1.87 1.88 1.87 1.88 1.87 1.88 1.87 1.88 1.87 1.88 1.7</td><td></td><td>Stickup (m)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td>frace water reek and and uddle cundwater</td></tr> <tr><td>Time Time 4.53 9.23</td><td></td><td>14</td><td>Container + Additive</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>÷</td><td></td><td>4ditives HNO₃</td></tr> <tr><td>OTH Date: Time Additive Time Time Container Time Additive 10,238 9,238 9,238 9,238 9,238 9,249 9</td><td>Additive Additive</td><td>001C:0</td><td>Type + Depth</td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td>Additive: W = no a X = conc. Y = Nac0 Z = Nac0</td></tr> <tr><td>Image: Contrainer Time Type + container Time Type + container Time Time Population Time Time Population Type + container Time Population 9,33 P - 23 9,33 P -</td><td>Additives Additives Additives Additives Additives Additives Additives Additives Additives Container Additives Container Additives Container Additives Container</td><td>N doL</td><td>Sample No</td><td>CL-20</td><td>Other</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td><td>Key</td></tr>	125	H		715	69.9	6.61	49.9	6.52	2.21	5.25	5,24						g device r n omersible pun s drive s lift	Sample Sample Sample Sample Proged (i) (i) (i) (i) (i) (i) (i) (i)	Total Sample Water Stekup Volume (m) (m) (m) (m) (m) Program (m) (m) Volume (m) (m) Volume (m) (m) Volume (m) (m) Volume (m) (m) (m) 7:0 7:0 2:5 7:90 3:7 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 3:5 2:5 7:90 5:5 3:5 7:90 5:5 3:5 7:90 5:5 5:5 7:90 5:5	ed By:	CC		1pd	1.6	17.6	921	1.6	11.5	179	18.0						Samplin B = Balt B = Balt S = Sprit GD = Gi GL = Ga	Stickup (m)	2516 216 Water Steckup Levoid Steckup 7.95 7.91 7.91 7.93 7.91 7.93 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.90 800 5.004 800 5.004 800 5.004	Sample	Volume Purged (L)		0.5	-	1.5	2	2.2	M	5.5	4								12516 Water 10001 1.87 1.87 1.87 1.87 1.87 1.87 1.87 1.87 1.88 1.87 1.88 1.87 1.88 1.87 1.88 1.87 1.88 1.7		Stickup (m)												2			frace water reek and and uddle cundwater	Time Time 4.53 9.23		14	Container + Additive													÷		4ditives HNO ₃	OTH Date: Time Additive Time Time Container Time Additive 10,238 9,238 9,238 9,238 9,238 9,249 9	Additive Additive	001C:0	Type + Depth						2								-	Additive: W = no a X = conc. 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and gate EARTH SCIENCES	NO in Ayert loow and the HOW		Comments	2 cpm	1						stadorpol sampled (mp))	when the 248 (Am)					tine flow cells with the following stabilisation criteria (daily) and in accordance with the manufacturers specifications
Grutt - hear	NNS LEMED	Site:	Colour	suriged	2					×	V	-	3					arameters parameters will be messured excitu in in- i DO when >1ppm (no criteria for<1ppm) EC bH V ORP V ORP inter will be calibration for pH, EC and D it least 2 point calibration for pH, EC and D
		1	Odour	HUdd														- Field 2:10% 2:10% 2:01% 2:01% 2:01% 2:01%
		CAD	EC uScm ⁻¹	2786	1125	314	HIK.	3142	340	3,055	3087				1		>	ontainer ylens glass
	nples	Client:	Dissofved Oxygen (ppm)	192	0.32	10.57	Dr.76	0.92	060	06.0	0.93	1					>	PI = Polyeth G = Amber
	er Sar		pe mV	-102.2	191-	-133.8	-1 36.S	-139.2	140.9	100 pt	-142.5						>	du Thent
	Wate	125	Hd	. cl.g	6.67	6.68	6.68	6.69	6.69	6919	6.69					10 Ja		ng device er ing ing as drive as lift salite displace bi
	for	ed By:	Temp	L.H.	0.U	17.8	18	1.81	13.3	18.)	15.2							Samplir B = Beilin B = Beilin S = Sprit S = Sprit S = Sprit S = Sprit S = Sprit S = Sprit S = Sp
701-4	istics	Samp	Volume Purged (L)	all	20100	7	326	日本	4.5	3	5.3		-					
18 0	cter		Stickup (m)		<u>v</u> :													face water reek am addie vurdwater rtesian ub-artesian
60.0	hara	0190	Water Level (m)	Sht's	8,265	3.26	928	5.27	8.17	11.8	12.8	4						Type SWP = Sur SWP = Pc SWP = Pc SWL = Pu GW = Gro GW = Gro GWS = Sr
J.C.	al Cl	ate:	Time	8.08	8.12	8.16	8.22	11.8	8.3	8.35	8.39					55		-
	nemic	0 +LX	Container + Additive		8				-									s b Holditives HH 3-03
137	Id CI	lo: 210	Type + Depth	2							4.4	C.						Additive W = no i X = cont X = Nac Z = Nac
SI	Fie	A doL	Sample No	LEMIS .						1								Key

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MF 90 Field Chemical Characteristics for Water Samples

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EARTH SCIENCES THE KNOW AND THE HOW	MG.	Comments	200-	1°					Stabinal , Smored (by))							In in-line flow cells with the following stabilisation oriteria ppm) at least daily) and in accordance with the manufacturers specifications at least daily) and in accordance with the manufacturers specifications
	Site: SI	Colour	y pAH [see		1		a a	s	- 1 a								Parameters parameters will be measured ex-shi parameters will be measured ex-shi s Turbidity EC EC M CRP Meter will be calibrated as meeded (a meter will be calibrated as meeded (a
2		Odour	Clarge	27 57		N8 11	\$	5	2			1					Field #1093 #109 #01 #101 #101 #101
2	CPP	EC uScm ⁴	4919	1990	(4863	路什朽	4744	4698	X BY		e.						Container hytene glass
mple	Client:	Dissolved Oxygen (ppm)	12.2.	068	0.83	18.0	(16.0	86.0	16.0				5			2	Sampling PI = Polyel G = Amber
er Sai		Vm eq	1.02-	513	ChS-	-58.3	-647	1:19-	-67.1								q. ment
VVale	JAS	¥	46.9	6:13-	6.75	41.9	plig	6.74	674							1	ag device er on bimensible pun es lift colon lift si five displace b
5	ed By:	CC	15.1	1691	17.1	1.1	1.11	1.1	1.2								Samplin B = Balk B = Balk S = Spri S = Spri G = G S L = G S L = G S L = C C = G C = G C = G C = G C = G
	Sample	Volume Purged (L)	0.5	15	200	35	4	4.5	6								
	3	Stickup (m)			<i>R</i> ,												ace water eek mind dile undwater tesian thesian
	26(6)1	Water Level (m)	Por	9.09	9.09	9.0	90.9	0.01	9.09								Type SWP = Surf SWP = Po SWP = Po SWP = Po SWL = Pu GWA = Ar GWA = Ar
5	ate:	Time	24:01	CH:0	10.54	10.59	10.11	11.0%	11.12								
	0 70	Container + Additive															es addifives HKO3 5,03
5	0: 2(0	Type + Depth			1												Addition W = no i X = cont X = Na/S Z = Na/S
	N doL	Sample No	GUID					+							÷		Key

ENVIRONMENTAL EARTH SCIENCES		S1.	Comments	Scon	1				Aubised, Samped (y)									in-line flow cells with the following stablisation criteria m) east daily) and in accordance with the manufacturers specifications of DO)
.515 to		Site: SMC	Colour	clar.	?			4										Field Parameters Field parameters art0% DO when >1ppm (no criteria for<1ppr art0% EC ab% EC ab% EC at0 n DH art0mV ORP The meter will be calibrated as needed (at th (i.e. at least 2 point calibration for pt, EC at
11:01 2:17:8	•		Odour	. WI	J	4							φ.					
	s	CUOF	EC uScm ⁻¹	2886	323)	3285	3307	3325	3327									Container abylena sr glass
GUZ	mple	Client:	Dissolved Oxygen (ppm)	1.27	6.32	0.51	84:0	0.59	0.79					1				Sampling PI = Polyn G = Amb
	er Sa		pe mV	76.6	27.1	2:2	1:42	21.8	20.8									tueuro dur
	Wate	Sel	Hq	7.10	98.9	6-65	6.85	6.84	6.84									ing device tion ubmersible pu device as drive as thre as thre deplace as the deplace as the deplace as the deplace as the device
2	s for	led By:	Temp C	1.1	1.8	18.7	18.8	R.8	18.6									Sampl Bampl Bampl Bampl Bampl Gampl Gampl Bampl Gampl Bampl Campl
	istic	Samp	Volume Purged (L)	6.5	SA	3	4	5	9					_	-			
	acter	0/13	Stickup (m)	0	0				_									Surface water Creek Pond Dam Dam Groundie Groundwater Artestan
	Char	2616	Water Level (m)	86	5 2.6	8.6	86	86	586			-		-		_	-	Type SWP = SWP = SWP = SWP = GWN = GWN = GWN =
	cal 0	Date:	Time	12.00	1.4	1225	1225	12.2	12.55					-				
	Chemi	the	Container + Additive										_	+				tives tives and filves and HNO, a,S,O, la,S,O,
60	D Die	No: J	Type + Depth	0						-	-	_		_	-	-	-	Addit X W = 1 Z = N
è	ill l	doL	Sample No	Guz														Key

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ENVIRONMENTAL EARTH SCIENCES THE KNOW AND THE HOW			Commonts	3cm	2 com		-		A.		Stolital Supell						e flow cells with the following stabilisation criteria " aity) and in accordance with the manufacturers specifications
		Site: SMS	Colour	surgery)	47											arameters anameters will be measured ax-situ in in-lin Do when >1ppm (no criteria for<1ppm) Turbidity C C ORP ORP ORP I et will be calibration as needed (at least di teat 2 point calibration for pH, EC and DO
2 200			Odour	PAH/SENC					~								Field F Field P ±10%1 ±10%1 ±10%2 ±10mV ±10mV
11/2/1	0	CPP	EC uScm ⁴	4130	Blon	3752	FILE	3908	3963	3476	3499	3487					Container Brylene glass
	mple	Client:	Dissolved Oxygen (ppm)	84-0	0-29	0.65	(90	4L.0	0.80	0.88	16:0	0.89					Sampling P1 = Polye G = Ambe
6 (er Sal		pe mV	1.12-	-37.3	-36.)	-38.8	1-9-1	F.Op-	40.6	8:07-	-40-8					mp
977	Wate	SEL	H	b.68	6.65	6165	59.9	4.64	0.00	6.66	6.66	6.bb					ng device on as drive s liftve dinon lift stiltve displace b
5	for	ed By:	Temp	1.91	18.4	1.81	1.81	18.4	12.4	83	18.3	18.4					Samplir B = Ball B = Ball B = Ball B = Ball C = Source C = C B = C C = C C = C C = C C = C C = C C = C
	istics	Sampl	Volume Purged (L)	-	Ey C	N	Set.	Sa	64 765	のあった	646	3 805					
	acter	113	Stickup (m)	10				~		d	0	7					urface water Creek Pond Pudde Artesian Sub-artesian
	Chara	26/6	Water Level (m)	PC.L	7.57	17.87	17.88	1785 H	19.7	62 2	192	67 (_		Type SWD = S SWD = SWD = SWD = SWD = GWS = GWA =
	cal C	Date:	Time	3.54	3.59	3.05	3.00	3.14	3.10	232	19.2	5.20					
	hemi	10074	Container + Additive														es additives AHO3 SrO3 SrO3
	ld C	Vo: 2	Type + Depth	9	>												Additiv X = con X = con X = Na ₂ Z = Na ₂
	Ē	dol	Sample No	Su	1					2				-		1	Key

								- R)								
	Comments	2 cpm.	2 2		(cpm.				Steloilised Sampled.	(drug)	>					n in-line Sow cells with the following stablisation criteria m) east daily) and in accordance with the manufacturers specifications
Site: Oug	Colour	down purcled black	N N	cleaning	0											Parameters parameters DO when >1ppm (no criteria for<1ppr Turbidity SC M V ORP wher with be calibrated as needed (at h mer with be calibrated as needed (at h
	Odour	nereage		- W									-			Field Field 10% 10% 10% 20% 20% 20% 10% 20% 10% 70% 10% 10% 10% 10% 10% 10% 10% 10% 10% 1
COP	EC uScm ⁻¹	6181 5	0298	tiseg	6259	LT2d	6435	6481	6456							fortainer hylene glass
Client:	Dissolved Oxygen (ppm)	0.65	0.28	01-0	6-99	0.95	96.0	0.94	14.0			2				Sampling PI = Polyet G = Amber
	pe mV	-163.0	176.5	1835	-156.1	179.3	1.271-	-177-S	-178.2							de tree
SPL	¥	469	16.9	6.89	6.8.9	0,90	6.85	6.35	6.85					-		ag device er ng homersible pun ts drive is lift ction lift s lift
ed By:	Temp C	16.5	17.8	1.81	17.3	10.9	16.91	169	D.U							Samplir B = Balk B = Balk B = Spirit S = Spirit G = G GL = G SL = Su SL = Su
Sampl	Volume Purged (L)	0.5	-	4	2.5	3	5.5	t	4.5					1		
	Stickup (m)														-	ace water sek od bdie bdie seian b-artesian
911	Water Level (m)	7.83	5P:T	197	196-2	J.96	J. L	7.96	1.96							Type SW = Surfi SW = Crr SWP = Pou SWP = Pou SWL = Puc GWA = Art GWS = Su
Date: 2	Time	8.27	8.32	8.37	8.42	8.47	8,52	8.51	8.00							
ory D	Container + Additive	2	4.													statives HRV0, 0,
0: 200	Type + Depth															Additives W = no ac X = conc. Y = NaOH Z = Na ₂ S ₂
V dol	Sample No	herre														Key

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MF 90 Field Chemical Characteristics for Water Samples

	ENVIRONMENTAL EARTH SCIENCES	THE KNOW AND THE HOW	melb Gasavores.	Comments	1 crow						6	Habsiel, Sungled . (mp))					a flow cells with the following stabilisation criteria ijy) and in accordance with the manufacturers specifications
			Site: South	Colour	suby grey b)			2									meters meters will be measured ax-situ in in-line when >1ppm (no criteria for<1ppm) idity. to the calibrated as needed (at least da will be calibration for pH, EC and DO) at 2 point calibration for pH, EC and DO)
21	5 20L			Odour	ount seneu		~			-		-						Field Para Field parare ±10% Turt ±10% Turt ±10m/ OR ±10m/ OR The meter (1.e. at least
P T	0.20	s	cb	EC uScm ⁻¹	3401	4021	3935	3842	3682	3667	3670	3633						Container Brylene glass
52 :	o : lc	mple	Client:	Dissolved Oxygen (ppm)	2.40	1.30	(9.0	Lh.0	0.51	0.63	0.59	0.53			2			Sampling PI = Polyei G = Amber
SLU	11	er Sal		pe mV	-105.5	0-121-	-133,8	- 1555	-18.6	-1139	-113.7	-1129						du uueut
	131	Wate	145	H	19.1	1.25	7.20	7.20	7.70	7.20	7.20	7.20						ng device er ing as drive as lift as lift ction lift b
	5	for	ed By:	CC	0.4	0-11	18.3	18.3	1.81	18.0	5.1	5.11				1		Samplir Babab P = Pisht S = Su S = Su G L = G G L = G C C = C C C = G C
		stics	Sampl	Volume Purged (L)	2:0	1	1.5	Ч	2.5	3	35	4						
		cteri		Stickup (m)														ace water eek. md ddle undwater lesian lb-artesian
		hara	2716	Water Level (m)	7:50	7.52	1.57	3.51	T.S.T	1.57	ts.r	FS:1						Type SWC = Cr SWP = Po SWP = Po SWP = Po GW = Gro GWA = Ar
		alC	Date:	Time	10.26	10-3)	£.01	10.41	01-01	1021	1056	11.00	-					
		hemic	D T M	Container + Additive														additives 5,05, 5,05,
		IQ CI	lo: JIC	Type + Depth											Ξ.			Additive W = no 4 X = conc X = Na ₂ S
		Fie	A dol	Sample No	GUIS													Key

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						1			4					1				
EAVIRONMENTAL EARTH SCIENCES THE KNOW AND THE HOW	Strice	Comments	2 cpm fresh have? Maybe leaking	when prove ?	Change to lopm	0				Stablied Empred (mp))							cition in the flow cells with the following stabilisation criteria cippm) (at least daily) and in accordance with the manufacturers specifications (c and DO)
	Site:	Colour	sitry yellow	et 1	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~		-										d Parameters	d paramoters will be measured ax-s % DO when >1ppm (no criteria for- % Turbidity % Turbidity int/ ORP int/ ORP int/ ORP int/ ORP inter will be calibrated as needed at least 2 point calibration for pH, E
-		Odour	Hed	G,										A.E.			Fiel	1001 1100 1100 1100 1100 1100
6 0	CBS	EC uScm ⁻¹	LbL	By	152	75/	757	7S7	749	749						<	- Anthalinae	glass
9-78	Client:	Dissolved Oxygen (ppm)	3.88	24-0	0.54	LT-D	46:0	0.63	0.96	86.0			1			1	Camalina (Pi = Polyet G = Amber
co i r Sar		be mV	202	1-11	1-199	181.7	(12)	182,4	1.181	(81.3						-	>	hent
0 S	1 Z	¥.,	P.49	549	5.15	10.9	P0.2	5.09	507	507							- denter	r n g omersådle pum s drive s åt tion lift tion lift s drive displacer
for \	d By:	Temp	8.5	18.9	19.0	18.91	9.0	L.61	19.2	1.6							V	B = Baile B = Baile B = Sprint SP = Sprint GD = Ga GL = Gat SL = Suc SL = Suc SL = Suc
stics	Sample	Volume Purged (L)	50	1.5	2145	2.5	3.5	<u>t</u>	545	6								
cteris	-	Stickup (m)																ace water sek nd m cdia cdia cdia bartesian b-artesian
Jara	d) nuc	Water Level (m)	8-315	8.38	3.40	8.40	5-40	64.8	07.6	8.40								SW = Surfa SW = Surfa SWP = Port SWP = Port SWP = Grou GWA = Art GWS = Su
al	ate:	Time	12.25	1230	0.35	1240	1245	Pt-c1	12.53	12.51								
emic		Container + Additive											7					No.
ch Ch	BURN :	Type + Depth	1										1				1000	W = no add W = no add Y = NaySi/ Z = NaySi/
lei	lob No	ample No	(In In										-					key

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MF 90 Field Chemical Characteristics for Water Samples

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ENVIRONMENTAL	THE KNDW AND THE HDW	7.	Comments	u Zupin.	-> feat His again to	Charge to I com	9			1.1	Stadaried Sampled	(dra)					h-line flow cells with the following stabilisation criteria at daily) and in accordance with the manufacturers specifications b0)
		Site: OUG	Colour	clar shippy you		н	CI.	~ ~	5	5	2	7.1					rameters ambors will be measured ex-shu in 0 when >1ppm (no criteria for<1ppm urbidity ORP ORP er will be calibrated as needed (at let sast 2 point calibrated for pH, EC and
20			Odour	Shyru- sere	e c	· ·	11	~	11	13	12						Field Pa Field Part ±10% DC ±10% DC ±10% DL ±10mY C ±10mY C 1/te met
P [1.0]	S	CPP	EC uScm ⁻¹	536	149	E	584	530	528	531	524						Container Bftylene er glass
1:02	mple	Client:	Dissolved Oxygen (ppm)	1.63	6.35	0.31	0,53	SL-0	88.0	09-0	0.78	3		4		-	Sampling PI = Poly G = Amb
	er Sa		be mV	-0.3	201	20.9	23.5	1.02	4.26	28.	25.5						duur
NZM	Wate	SA	H	6.63	9h.9	6.44	54.9	648	6.49	649	6.49						ing device ling device ton tion abmensible pu bas lift bas lift ba
C	for	ed By:	Temp	1.81	18.6	518.7	1.81	1.81	18.1	11.9	178						Sampli B = B B = B B = C C = C =
	stics	Sampl	Volume Purged (L)	0.5	1.5	A	ASS.	3.5	7	45	5						
	cteri	113	Stickup (m)	80.													rface water rreck ond am uddfe undwater ub-artesian
	hara	9/12	Water Level (m)	2598	B. B	8.19	918	8.0	\$.(0	8.10	6.8						Type SW = Su SWC = C SWD = D SWL = P GW = GR GWA = A GWS = S
	al C	Date:	Time	1.57	2.58	3.02	102	3.12	3.17	8. D	3.27						1 ¹⁰
	lemic	14 1	Container + Additive														ddfives HNO ₃
	d Ch	0: 2106	Type + Depth	-													Additives W = no ac X = conc. Y = NaOH Z = Na ₂ S ₁
	Liel	Job N	ample No	Saur			X										Key

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IENTAL ENCES THE HOW		its Acces		cheek.												abilisation criteria manufacturers specifications	
87 ENVIRONN EARTH SCI THE KNOW AND	ismoder Parke i	Commer	Start an Icph	inc to repute								ı				u in In-line flow cells with the following st ppm} and in accordance with the st least daily) and in accordance with the	
VOC w. 65 epth: 7.65	Coural Site: Ga	Colour	yellow		E1			41. 1						· · ·		 ield Parameters ieid parameters will be measured ex-situation, DO when >1ppm (no criteria fox<1) 10% Turbidity, 5% EC 0.1 pH 10mV ORP 10mV ORP the meter with be calibrated as needed (a te at teast 2 point calibration for pH, EC	
N HING	phillip	Odour		77675 7		nore			000		a rola		-			шшийййн Сс	
ر الم مرد nples	Client: Port	issolved EC Oxygen uScm ⁻¹ (ppm)	2 - 07 1528	.66 1667	D14 1667	·44 1639	ton 89	.74 1593	1.82 1593	90 1599	25 + 10					 Sampling Containe Pl = Polyethylene G = Amber glass	
a of yest		A A B B B B B B B B B B B B B B B B B B	0-12-0	5 46.2 C	1 53.1	2 50.4 1	1 4.87 1	1 0.194 1	8 51.0	8 52.(I	Liline					e le pump splacement	
APL	led By: K	Temp pH	17.3 6.5	18.2 6 3	18-7 6.41	18.7 6.5	18.7 6.5	18.7 6.5	18.8 6.4	18.8 6.4	des Sta					Sampling devic B = Baller P = Piston S = Spring SP = Sumrest GD = Gas drive GL = Gas fit SL = Suction lift PD = Positive di G = Grab	
NO N (bail	Samp	Stickup Votume (m) Purged (L)	0.5	0.1	1.5	2.0	2.5	3	3.5	4	er anne					 ce water ek d die ndwater ndwater -artesian	
l Charae	e: 26/6/13	ime Water Level (m)	54 6.88	05 6.70	10 11.94	15 6.95	200 6.95	5-57	28 6.97	33 6-97	35 00					Type SWF = Surfa SWP = Por SWP = Por SWN = Pud GWA = Arto GWS = Surf	
Chemica	シフテイ Dat	- Container T + Additive		<u> </u>	Ň	Ň	\$7	<u>0</u>	6.5	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~ ~					 tives tives onc. HNO ₃ acH la ₂ S2O ₃	
Field C	Job No: 2,	Sample Type														Key Addi W = 1 X = 6 Z = N Z = N	

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 Υ S ENVIRONMENTAL EARTH SCIENCES THE KNOW AND THE HOW 	envoles lade	Comments	2 com start.		W Slowly & but ale.						•					situ in in-line flow cells with the following stablisation criteria <1pm) i (at least daily) and in accordance with the manulacturers specifications EC and DO)
33 Hed WC-7	Council Site: G	r Colour	• • •	r shighty cloudy	v u	Clender	۲۲ ۱	5								Field Parameters Field parameters will be measured ex- ±10% Do when >1ppm (no criteria for ±0% Turbidity, ±5% EC ±0.1 pH ±10mV ORP The meter will be calibrated as needed (i.e. at least 2 point calibration for pH, I
AW . 	Client: Part Ohllep	Dissolved EC Odour Oxygen uScm ¹ (ppm)		NJ15 101/11 21. JN	0.31 19, 130 0	0.72 9311 ~	1.24 6912	1.54 6504 V	1.64 6889	1.68 6289	Spreced				· · · ·	Sampling Container PI = Polyettylene G = Amber glass
for Water Sal	ed By: KK	Temp pH pe mV C		16.4 6.57 2.3	17.4 6.87 -30.0	(7.7 6.64 S.3	18.0 6.56 20.1	18.0 6.51 22.3	18-1 6.49 21.0	18.1 6.50 181	ans stable					Sampling device B = Bailer P = Piston P = Piston S = Sping S = Gas drive G = Gas drive G = Cas lift S = Suction lift P D = Positive displacement G = Grab
naracteristics	P, 6, 13 Sample	Water Stickup Volume Levei (m) Purged (m) (L)	7:45	7:49 0.5	M153 1	7.56 2.5	7:57 3.5	7:58 4	1.5	4.1	UQA					Type SW = Surface water SWC = Creek SWC = Creek SWC = Pond SWL = Puddle GW = Groundwater GWS = Sub-artesian GWS = Sub-artesian
Chemical Ch	310074 Date: 27	pe + Container Time pth + Additive	8:53	8:36	114:8	649.8	8,54	0.07	9.09	. 9:(2						dditives d = additves = conc. HNO ₃ = Na ₂ S ₂ O ₁ = Na ₂ S ₂ O ₁
Field	Job No:	Sample Tyr No De														Key Z < X S A

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L - 7. 6 15 ENVIRONMENTAL EARTH SCIENCES THE KNOW AND THE HOW	iswovien Pauli	Steed	start 2 gows	. /		WL V = Jepour	ł	а 1		we d						situ in in-line flow cells with the foftowing stabilisation criteria <1pmi) (at least daily) and in accordance with the manufacturers specifications	EC and DO)
Norgetta W	Site: Qo	Colour		clandy.	turbed yl-red.		dearing	11 A 2		clear			. /			Id Parameters Id parameters will be measured ex- 3% Do when >1ppm (no criteria for 3% Turbidity 8 EC 1pH 3mV ORP e meter will be calibrated as needer	. at least 2 point calibration for pri-
RW SS initial		Odour		Grows L	to sharpy	- je	f8 ~	89	31	· Groys 1	5	18	Sandloo			 161 171 171 171 171 171 171 171 171 171	{1.6
(mples	Client: 00	Dissolved EC Oxygen uScn (ppm)		1-91 155	0.36 154	0.26 202	0.57 15'	1.03 148	1.23 135	1.26 148	1.33 149	1.39 144	red -			 Sampling Contair PI = Polyethylene G = Amber glass	
Vater Sa		pe mv		:32 -43.0	.39 -113.2	1-43 -147.2	-31 -133.0	-25 -127.9	1.20 -115.7	-14 -106.7	-06 - 73.0	0.18-20.	Stabut			levice ersible pump frive n fit ve displacement	
ics for V	ampled By: k	olume Temp urged C (L)	0	5 15.57	t 8.91 t.	5 17.3 7	E 9:EI 1.	E 97E1 S	5 17.7 7	t t-t1 8.	5 17.7 J	エネホ	meter			 Sampling c B = Bailer B = Bailer B = Spring S = Spring S = Such G = Gas c G = Cas c S = Such S = Such S = Such	G = Grab
racterist	St C St	ter Stickup V el (m) P	Sq	0	0	- t-	3 2	00	23	0	6		0			e = Surface water == Creek == Pond == Corundwater = Corundwater 5 = Sub-artesian	
ical Cha	Date: 27. (Time Val	102.01	10:33	10:35 7.6	「たたう」	10.55 7-5	11.08 7.9	51:11	y- 8 77 : 11	11:31 8.0	0/1/1				Type SWP SWP SWP SWP GWP GWP GWP	
d Chemi	10074	Type + Container Depth + Additive				vy hydro a characterization a characterization a characterization a characterization a characterization a charac				, ,						 Additives W = no additives X = conc. HNO ₃ Y = NaOH Z = Na ₂ S ₃ O ₃	
Field	N dol	Sample No				í									 	Key	

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ENVIRONMENTAL EARTH SCIENCES THE KNOW AND THE HOW	ours Park	Comments	Start g cpin			to I cpin	t I one seduced que.		に ちんむん						-line flow cells with the following stabilisation criteria of daily) and in accordance with the manufacturers specifications DO)
Show where 7.02 depth: 10.38	Site: Garm	lour Colour		dente cleer, sight	. clearder		ст г, [M	ht. elouoly, no	3		ned				Field Parameters Field Parameters will be measured ex-situ in in ±10% D0 when >1ppm (no criteria for<1ppm) ±10% Turbidity ±10% CC ±0.1 pH ±10mV ORP The meter will be calibrated as needed (at leas (i.e. at least 2 point calibration for pH, EC and
رال In Samples	Client: POCC	oemV Dissolved EC Oxygen uScm ⁻¹ Od (ppm)		723 1.66 5634 mo	59.7 0.36 3716 ·	··· hsh ht o sts	55.2 1.40 4 507	H3 1.65 4519 564	1.5 1.69 HS66 2	299h 1.2.1 ptb	Shally - san				Sampling Container PI = Polyelhylene G = Amber glass int
ristics for Water	Sampled By: KK	up Volume Temp pH Purged C (L)	292-24:	0.5 16.2 66.91 -	1.0 12.5 6.83-	1.5 17.5 6.81 -	2 17.1 6.81-	2.5 17.1 6.80 -1	3 172679-4	3.5 17.2 6.82 -	paraurater				er Sampling device B = Bailer P = Piston S = Spring S = Submersible pump G = G as drive G = Grab G = Grab
emical Characte	24 Date: 27. 6. 3	ontainer Time Water Stick Additive Level (m) (m)	12:39 7.0 .	12.487.05	12.567.10	t1.t 20:1	01.7 80:1	1:15 7.10	1:25 7.10	1:36 7.10					Type Type and SWT = Surface wat SWT = Surface wat SWT = Creek SWT = Creek SWT = Pudde . SWL = Pudde . SWL = Pudde . GWL = Artesian GWS = Sub-artesi
Field Che	200) C:oN qor	Sample Type + C(No Depth +													Key Additives W = no addit X = conc. HN Y = NaOH Z = Na25_503

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	S 2 EARTH SCIENCES THE KNOW AND THE HDW	" Gasworld Park	Comments	start Ican	celmented !!		0	see.									ured ex-situ in in-line flow cells with the following stabilisation criteria the in-line flow cells with the following stabilisation criteria static action) is needed (at least daily) and in accordance with the manufacturers specifications for pH, EC and DO)	Pages 1 of
SIMU	12 9.08	Sit	Colour	1. 1	rel Ho	hubed heal	cleant y	t slightly the	clearing		clea	sampled	/				Field Parameters Field parameters will be mea ±10% Do when >1ppm (no o ±10% Turbidity ±5% EC ±0.1 pH ±10mV ORP ±10mV ORP The meter will be calibrated a (.e. at least 2 point calibrated	
	Se Se	: O. PPCC	EC Odou			C34 51134F	~ t63	632 54547	673	698	627	and al					ng Container Iyethydene ber glass	2011 Version 9
	ter Sample	Clien	pe mV Dissolved Oxygen (ppm)			6 142.3 1.60	(HS.7 1.96	F 143.6 2.17	- 135.8 1.98	136.4 1.91	1 133.0 1.81	Stabil					 Sampl PI = P0 G = An G = An Ideement	5 October
	cs for Wa	npled By: KK	me Temp bH ged C			5 18.0 5.41	5 18-0 5-52	G 18.0 5.57	5 18.0 5.65	0 18.0 5.66	5 13,0 5,60	" curete		~			Sampling device B = Baiter B = Baiter B = Sping S = Sping S = Sping S = Sas drive G = Gas drive G = Gas drive G = Stab	
	aracteristi	, (, . (,) San	ater Stickup Volu svel (m) Purg m) (1	04		-18 1-5	23 2.	25 2.	27 3.	29 4.	51 4.						pe V = Surface water VC = Creek VC = Creek VD = Pam VL = Puddle VL = Ardsian VA = Ardssian VS = Sub-ardssian	Vater Campleo
	mical Cha	イ Date: 27	ditive L	3:01 9.	3:15	3:259	3:37 9	5:43 9.	3:57 9.	21:01 7.0	4:139:	-					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Characteristics for V
	ield Cher	10012:0N di	nple Type + Cont to Depth + Add														 y Additives W = no additive: X = conc. HNO ₃ Y = Na ₂ S ₂ O ₃ Z = Na ₂ S ₂ O ₃	Ton Eadd Chamical
	Ц	၂ ု	San N				<u> </u>]		Key	1

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ENVIRONMENTAL EARTH SCIENCES THE KNBW AND THE HOW) Park	Comments		hobt CI				on Icom			eal swapped .					ow cells with the following stabilisation criteria) and in accordance with the manufacturers specifications
(an NAPL		Site: Garwork	ofour	0	5 km	hubid .			gray old			7 Sheloiling					It be measured ex-situ in in-line fic pm (no criteria for<1 ppm) illbrated as needed (at least daily) calibration for pH, EC and DO)
7.875		Helly Caned	Odouf	where set	>	istic gray.	1 510	ر ۲	u stieghtly			nav camel	à				Field Parameters Field parameters wi ±10% D0 when > ft ±10% Turbidity ±5% EC ±0.1 pH ±0.1 pH ±10.nV ORP The meter will be cs (i.e. at least 2 point
Wichad w	Iples	lient: Parta P	ssolved EC sygen uScm ⁻¹ ppm)	02 64 San	1 8:11am	54 2328 4	05 2118 Si	84 2403 4	97 2166	96 2319	99 2148	-96 2257		1			Sampling Container Pi = Polyethytene G = Amber glass
	Vater Sam		pH pemV Dis	for NA	- start	·· 79 - 14.6 0.	1-1-21-9 1.	01 -42-1 1-	.00 -39.4 I.	-02-50.3 1-	-1 Surg 1-	-99-57.L 1.					levice ersible pump firve n lift ve displacement
	stics for V	Sampled By: K	Volume Temp Purged C · (L)	barter	0	0.5 15.6 6	10 11-23	E E-71 8.1	2 1677	3.2.13.13	2.5 A.O 7	4 17.6					Sampling c B = Balter B = Balter B = Spring S = Subm G = Gas (C = Gas (C = Cas (C =
	Characteri	26/6/13	Water Stickup Level (m) (m)	eel i	7.81	7.85	-187	7.88			1-88	06t		-			Type SW = Surface water SWC = Creek SWC = Pond SWD = Dam SWL = Croundia GW = Groundia GWA = Artesian GWS = Sub-artesian
	hemical (werd Date:	Container Time + Additive	R	2:03	11:8	8:26	8:34	8:30	8:52	8:51	9:03					ives to additives pnc. HNO3 aOH aOH a2O3
	Field C	Job No: 26	sample Type + No Depth	7 or	5												(9) Additi W = n W = n V =

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	ENVIRONMENTAL FARTH SCIENCES	THE KNOW AND THE HOW	ioks Pak	Comments		CONN,					ned - SAMPLED				,		e flow cells with the following stabilisation criteria ally) and in accordance with the manufacturers specifications	. Pages 1 of 1
	0.93 m	244 10.06 m	"Ilip Council Site: Gain	Odour Colour		hohe 1 shigh 14 turbid and 1		" cleudy y1-gg.	۰ د ۱۱ ۱۱	clear	Parameter stabile						Field Parameters Field Parameters will be measured ax-slut in in-lin ±10% DO when >1ppm (no criteria for<1ppm) ±10% Turbidity. ±5% EC ±0.1 pH ±10mV ORP ±0.1 PH ±10mV ORP (i.e. at least 2 point calibration for pH, EC and DO (i.e. at least 2 point calibration for pH, EC and DO	0
	MC	amples ^{De} 7	Client: $l_{0,\ell} \in Q$	Dissolved EC Oxygen uScm ⁻¹ (ppm)		1.53 841 5	1.34 812	1.84 808	2.00 791	2.35 787	2.46 786	 					Sampling Container Pt = Polyethytene G = Amber glass	5 October 2011 Version
- 0 2 2		tics for Water Sa	ampled By: LIC	Volume Temp pH pe mV Purged C (L)		0.8 p.7 592 65.7	2 13.3 5.78 100.2	2.5 18.6 5.86 111.0	5.5 [8.5] 5.85 114.5	H. 2 18.6 5.84 WU.7	1.7 13.5 5.83 114.0						Sampling device B = Bailer P = Piston S = Spring S = Submersible pump GD = Gas drive GL = Gas drive GL = Gastrive displacement PD = Positive displacement G = Grab	
		al Characteris	ate: 26.6.13 S	Time Water Stickup V Level (m) F (m)	1:58 8.90 -	2:01 8.90 0	2:(3 8.95	2,24	12:36 9.05 3	2:479.07 4	2:38 9.09 4	 - - -					Type Type SW = Surface waler SWC = Creek SWP = Pond SWD = Dam SWL = Punddle GW = Artesian GWA = Artesian GWS = Sub-artesian	eristics for Water Samples
		Id Chemics	No: 210074 DE	Type + Container Depth + Additive		· • • • •			·			 					Additives W = no additives X = conc. HNO₃ Y = Na₀H Z = Na₅S₂O₃	Field Chemical Charact
		Fie	doL	Sample No	J. W. OC												Key	MF 90

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	210	nical	5	aract	erist	lics	for V	Vate	r Sa	mple	S			THE KNOW AND THE HOW	
:0	510074	Date	5	110	ŝ	ampled	I By:	SFL.	100.000	Client:	Curry	St 84	Phillip Site: Sa	ut never cashores.	*: -
Den	e + Contai	tive Ti		Vater Stit Level (r (m)	n) P V	olume urged (L)	Cop	Ŧ	Vm aq	Dissolved Oxygen (ppm)	uScm ³	Odour	Colour	Comments	
- 663			5	-12		-	1.51	7.28	Sitte	9.85	a12.5	Repart	Clearyward	Started a logan - Not every	
			-			r	5.8	6 84	158-	3.68	1628			have ledun. Purped =1.52	
			7	D.34		10	16,0	686	0.26-	3.74	1001			Build duy = 102	
	i f		N N	·45	+	1					-		BINC: 9	L 202 LD.	
Ca	ne bick	10 20	in Sar	se		11	000	88	19.9	2.88	3670			sarped 3	2
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∢ ≤x≻N	ditives = no additives = conc. HNO; = Nag5,0;			Ype SW = Surface w SWC = Creek SWC = Creek WD = Pond WD = Dan WL = Puddle WM = Artesian WM = Artesian	ater Mer sian	0.1	Sampling B = Baller P = Piston S = Spring SP = Subn GD = Gas GL = Gas SL = Such PD = Post	device hersible pum drive inf on lift vo displacen	bent	Sampling PI = Poly G = Ambe	Container athylene er glass		eid Parameters ieid Parameters will be measured ex- 10% Do when > topm (no criteria for 10% Turbidity 5% EC 0.1 pH 10m ORP a released as meeded a released on the orbit.	situ in in-line flow cells with the following stabilisation offeria ctppm) (a flow cells with the following stabilisation offeria (a floast daily) and in accordance with the manufacturers specifications ic and DO)	

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MF 90 Field Chemical Characteristics for Water Samples

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38 Hiel WL > 7.10 Double > 10.05	s index - index	Port Phillip Coursel Site: Ga	EC Odour Colour	a debed rear well	4391 istrand dark grey	the states in the	3204 Shore of very sh	3904 S	4337	trsst	4628	4394 - rested, relay	(357		pm.			Image: Single Parameters Field Parameters ylene Field parameters will be measured ex-sit ylene Field parameters will be measured ex-sit 10% Durbuilty 10% Durbuilty ±10% Durbuilty ±10% Durbuilty ±5% EC ±0.1 pH ±0.1 pH *10m/ ORP ±10m/ ORP Field as needed (a (i.e. at least 2 point calibration for pH, EC
MB (PS)	stics for Water Samples	sampled By: KUC Client:	Volume Temp pH pe.mV Dissolved Purged C Dissolved (2) (L) (ppm)	more de la him bor	1 1656.44 -76.1 1.66	1.8 16.7 6.54 -662 1.16	20 N. F. C. T. C. Z. L. Z. L. S. C.	3 16.7 6.52-62-22-58	4 (12.46.42 -51.7 2.57	5 16.74.6.39-547 2.48	6 17-0 6-37 -545 3.15	5.8 17.2 6.94 -56.0 5.85 -	3.5-17-46.18-46.56.07	2 recorer.	Sampled 2 12:35			Sampling device Sampling C B = Baller P = Piston G = Amber S = Spring S = Submersible pump GD = Gas fitt GL = Gas fitt SL = Suction lift PD = Positive displacement G = Grab
R A (lemical Characteris	074 Date: 26/6/(3 S	Container Time Water Stickup + Additive Level (m) (m)	Sared on se	1/1/20/	10.50 9.33	12:622.01	00:11	11:02 9.57	10:11		9.72 6	(1.23 0.90	left z	1412:20 9.12 -	3	· · · · ·	Type dilives Type Sw = Surface water HNO ₃ Sw = Surface water Sw = Creck SwP = Pond SwD = Dam SwD = Dam GwA = Artesian GWS = Sub-artesian
	Field Ch	Ort: ON dor	Sample Type + No Depth	,			F										 	 Key Additives W = no ac X = cone. Y = NaoN Z = Na ₂ S

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IVIE 30 FIEID CREMICAL CRAFACTERISTICS FOR WAREN SAMPLES

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7. 8 7 Day TOC ENVIRONMENTAL EARTH SCIENCES THE KNOW AND THE HOW		S. Melbound	Comments	1 com start.	up to 2 coul	· ·												estu in in-line flow cells with the following stabilisation criteria in-tippm) arctippm) ed (at least daily) and in accordance with the manufacturers specifications , EC and DO)
al where 7.93		Site:	Colour	yeiland 4cl	HC/PAH	yellow	5	a		slightly - yellow	ה ה	ed a sitte	*					Field Parameters Field Parameters will be measured as 210% DO when >1ppm (no criteria fo ±10% LC ±0.1 pH ±10mV ORP ±10mV ORP The meter will be calibrated as needs (i.e. at least 2 point calibration for pH
inihi		050	Odour	8	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	à HC/N	5	9 u	6	4	3	Rond						
	ples	lient: C	solved EC ygen uScm	35 364	95 2642	20 270	73 270	55 284	90 330	-98 3391	06 354	Ref	D					Sampling Contain PI = Polyethylene G = Amber glass
	er Sam		Dis: Dis: Dis: Dis:	11	-61.3 3.	-47.3 1.	-44.6 1.	43.6 2	46.3 2.	-48.8 2	-49.03	che l'se						rip ement
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	acteris	s S	Stickup (m)									001						urface water Creek water Pond Dam Juddle . Artesian Sub-artesian
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	ield (b No:-	ple Type bepti	,			-					-						Adc W = X Y = Z Z = Z
	Ц	P	Sam															K



APPENDIX B WASTE TRANSPORT CERTIFICATE

		ENVIRONMENT PROTECTION AUTHORITY WASTE TRANSPORT CERTIFICATE 1050060	
the Waste.	1.	Name of Waste Producer Address of Site of Waste Source Auge of Emergency Contact Phone Auge of Site State State	
PART A ed by the Producer of	3. 4.	Intended Disposal Route - Recycling Landfill Energy Recovery Chem/Phys Treatment Disposal Route - Recycling Landfill Energy Recovery Chem/Phys Treatment Disposal Route - Recycling Landfill Energy Recovery Chem/Phys Treatment Disposal Route - Recycling Landfill Energy Recovery Chem/Phys Treatment Disposal Route - Recycling Landfill Energy Recovery Chem/Phys Treatment Disposal Route - Recycling Landfill Energy Recovery Chem/Phys Treatment Disposal Route - Recycling Landfill Energy Recovery Chem/Phys Treatment Disposal Route - Recycling Landfill Energy Recovery Chem/Phys Treatment Disposal Route - Recycling Landfill Energy Recovery Chem/Phys Treatment Disposal Route - Recycling Landfill Energy Recovery Chem/Phys Treatment Disposal Route - Recycling Landfill Energy Recovery Landfill Energy	
To be complete	5.	Waste Code No. (List 1) Hazard Category Contaminants (List 3) Waste Origin (List 4) U.N. Number (List 2) Class Packing Group Bulk/No. of Packages JONATION NH Image: State S	PLEASE USE BLOCK LETTERS
To be completed by the Waste Transporter	6.	Signature Date	OMPLETED PART A
ving Waste.	7.	Name of Disposal/Treatment/Storage Facility Licence No. Address A DIVISION OF DOLOMATRIX AUST. LTD Type of Treatment (List 5) 83 DOHERTYS RD LAVERTON NTH S025 D.1.5	SON/COMPANY WHO C
PART C by the Depot Rece	9.	Are there any discrepancies between the wastes described above and the waste received? YES NO Item of the second sec	AINED BY THE PERS
completed	10	Name and address of any other waste receiver to which the waste receiver intends that the waste be transported	TO BE RET
To be c	1100	I hereby acknowledge acceptance of the waste described in part A. Name DAVIDIDIEBER Signature Date	COPY 2 -

5.00

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COPY 2



APPENDIX C

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES



ANALYTICAL DATA VALIDATION

Specific elements relating to the data validation of the groundwater sampling data that have been checked and assessed for this project were:

- preservation and storage of samples upon collection and during transport to the laboratory in order to maintain sample integrity in accordance with AS4482.1-2005 (Standards Australia, 2005) and Victorian EPA Industrial Waste Resource Guidelines 2009 "Sampling and analysis of waters, wastewaters, soils and wastes";
- calibration of field equipment(refer to Attachment C1);
- sample holding times to maintain sample integrity in accordance with AS4482.1-2005 (Standards Australia, 2005);
- use of appropriate analytical procedures in accordance with National Association of Testing Authorities (NATA);
- required limits of reporting to be below applied guideline concentrations;
- frequency of conducting quality control measurements as defined in AS4482.1-2005 (Standards Australia, 2005), National Environment Protection Measure (NEPM 1999) – *"Guideline on data collection, sample design and reporting"* and Victorian EPA Industrial Waste Resource Guidelines 2009 - *"Sampling and analysis of waters, wastewaters, soils and wastes"*;
- laboratory blank results which enable the measurement of incidental or accidental contamination within the laboratory;
- matrix spike recovery results in order to assess the effects of the sample matrix on the precision and accuracy of the analyses. The desired matrix spike recovery range is between 60% - 140%;
- surrogate spike results in order to assess the accuracy of organic analyses that involve chromatographic techniques. The desired surrogate recovery range is between 60% -140%;
- intra laboratory duplicate results to assess the combined precision of sampling, sample preparation and analysis AS4482.1-2005 (Standards Australia, 2005);
- inter laboratory duplicate results to assess the accuracy of the data generated by the primary laboratory in accordance with AS4482.1-2005 (Standards Australia, 2005);
- field equipment blanks and trip blank to be collected where applicable, to ensure that no cross contamination occurs during sampling and transit; and
- the occurrence of apparently unusual or anomalous results, e.g. laboratory results that appear to be inconsistent with field observations or measurements.

The following sections summarise the specific analytical data quality elements that were checked and assessed for this project.



1.1 Development of Data Quality Objectives

Development of data quality objectives (DQOs) for each project is a requirement of the National environment protection (assessment of site contamination) measure (NEPC 1999). This is based on a DQO process formulated by the USEPA for contaminated land assessment and remediation. This has not been formally adopted by the EPA Victoria or the contaminated land industry, however, it provides sound guidance for a consistent approach in understanding site assessment and remediation and based on the DQO's the following measurement data quality indicators (MDQIS) is provided in Table 1 below.

TABLE 1 MEASUREMENT DATA QUALITY INDICATORS (MDQIS)

			Crit	eria
Parameter	Procedure	Minimum Frequency	(5 to 10x LOR)	>10x LOR
		1 in 20 - metals	<80 RPD	<50 RPD
B	Field Duplicates	1 in 20 - semi-volatiles	<100 RPD	<80 RPD
Precision		1 in 20 - volatiles	<150 RPD	<130 RPD
	Lab Replicate*	1 in 20	<50 RPD	<30 RPD
	Reference Material			
Accuracy	Matrix spikes	1 in 10	60% to 140%R	80% to 120%R
	Surrogate spikes			
5	Reagent Blanks	1 per batch	No de	tection
Representativeness	Holding Times*	Every sample		-
	Trip Blank			,
Blanks	Rinsate Blanks	1 per batch	No de	tection
Sensitivity	Limit of Reporting	Every sample	LOR < ½ s	site criteria

Notes:

1. RPD - relative percentage difference

2. %R – percent recovery

It should be noted that Standards Australia (AS4482.1) specify that typical MDQIs for precision should be ≤50% RPD, however also acknowledge that low concentrations and organic compounds in particular can be acceptably outside this range. As the standard suggests, an RPD of >50% has been used as a 'trigger' and values above this level of repeatability have also been noted and explained.



1.2 Collection, preservation, transportation and storage of samples

Samples were collected, preserved and transported by Environmental Earth Sciences field staff and are considered to be representative of the groundwater conditions encountered during the investigation. This sampling program was performed in accordance with AS4482.1-2005 (Standards Australia, 2005) and under chain of custody protocols. Copies of the chain of custody documentation can be found within Appendix D of the report.

1.3 Calibration of field equipment

The calibration of the water quality kit was undertaken on a daily basis throughout the groundwater sampling. The calibration records can be found within Attachment C1.

1.4 Holding Times

Analysed samples were extracted and analysed within acceptable holding times as defined in Australian Standard (AS 4482.1), 2005, *Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 1: Non-volatile and Semi-volatile Compounds* and Victorian EPA Industrial Waste Resource Guidelines 2009 - "*Sampling and analysis of waters, wastewaters, soils and wastes*" with the exception of pH and dissolved oxygen in selected groundwater samples which are not considered to be a chemical of concern and the measured field parameters can be used to validate the lab results and vice versa.

Refer to Attachment C2 for the sample receipt notification.

1.5 Laboratories and Analytical Procedures

The laboratories used NATA accredited methods for the analyses undertaken and the methods utilised are described in the laboratory reports (Appendix D).

Primary samples collected were sent to ALS Environmental Laboratory and secondary samples were sent to Eurofins/MGT Laboratory.

1.6 Required Limits of Reporting

Acceptable limits of reporting (LOR) were mostly provided by the analytical laboratory to allow the results to be compared against the groundwater investigation levels with the exception of selenium that was considered not a chemical of concern.

1.7 Laboratory Method Blanks

Reported results for laboratory method blank samples were lower than laboratory LORs.



1.8 Laboratory Duplicates

Laboratory duplicate results can be found in the analytical laboratory reports. The Relative Percent Difference (RPD) between analytical results for primary samples and their corresponding laboratory soil and groundwater duplicates were generally within acceptable limits of 0-30%. As such, the results obtained are considered to be reliable and acceptable.

1.9 Matrix Spike Recoveries

The matrix spike recovery results can be found in the analytical laboratory reports. Matrix spike recoveries were generally within the laboratory DQO ranges with the exception of at least one as not determined (where the background level greater than or equal to 4x spike level) or low recovery (where the recovery is less than the lower data quality objective) for each batch of report for one or more of the following analytes (total cyanide, sulphate, ammonia, chloride, manganese). However, as the majority of the matrix spike recoveries (over 90%) were within the laboratory DQO ranges with only few of the analytes were reported with either not determined or low limit, therefore matrix spike recoveries can still be considered acceptable.

1.10 Laboratory Spike Recoveries

The surrogate spike recovery results can be found in the analytical laboratory reports and generally ranged within the DQO with the exception of few total cyanide results, which could be due to sample interference.

1.11 Groundwater Duplicate and Triplicate Samples

Two duplicate and three triplicate samples were collected during the groundwater sampling program. Duplicate and triplicate samples were collected at the required frequency of 1 groundwater duplicate sample per 20 primary samples for groundwater (5%). RPD calculations for the duplicate and triplicate samples and their corresponding primary samples are presented within the attached **Table C1**.

It is noted that duplicate 2 and split 2 were not analysed for ammonia and sulphate as it was overlooked during the preparation of CoC but the remainder of the analytes can be considered sufficient for the purpose of quality assurance/quality control.

The RPDs between the primary samples and their corresponding duplicate samples were assessed against Environmental Earth Sciences' Measurement Data quality Indicators (Table 1), although RPDs greater than 50% were also examined as suggested by AS4482.1.

Calculated RPDs between the primary sample and their corresponding duplicate and triplicate samples were generally within the acceptable limits specified in our MQDI with the exception of copper concentrations between GW43 and DUP1 which could be due to laboratory sample preparation and ammonia between GW43 and Split 1(refer to **Table C3**, bold and highlights RPD's) which could be due to difference in analytical methods (primary sample by discrete analyzer and split sample by flow injection analysis) and

Those other anlytes (refer to **Table C3**, bold RPD's) reported above 50% could be generally due to low levels detected (<10 x LOR). Hence, based on the general data set, the results can be considered reliable.



1.12 Equipment Rinsate and Trip Blanks

1.12.1 Groundwater Sampling Program

Four equipment rinsate blanks were collected as part of the groundwater sampling program to ensure cross contamination between samples was not occurring due to insufficient decontamination of equipment used. The results of the equipment rinsate blanks are presented in **Table C4**.

The equipment rinsate blank results reported chemical concentrations below the LOR with the exception of RIN3. The silica gel clean up and re-analysis was undertaken on RIN 3 and the results indicated that 100% of previously identified TPH compounds were confirmed to be from primarily natural organic influences such as humic and fluvic acids rather than attributed to true petroleum hydrocarbons.

The RIN3 was collected out of the interface meter upon completion of monitoring well GW38 where elevated TRH fractions were reported and then followed by the sampling of monitoring well GW09. Although TRH fractions were reported at RIN3, based on the results of monitoring well GW09, it was confirmed that it was not contaminated due to potential insufficient decontamination process.

Overall, it can be considered that the decontamination procedures applied for this groundwater sampling event were sufficient and appropriate even with the minor detection of TRH fractions at RIN3.

Eight trip blanks were collected as part of the groundwater sampling program to confirm that cross contamination did not occur during transit of samples. The results of the trip blanks are presented in **Table C4**.

The trip blank results reported chemical concentrations below the LOR, which indicates that no potential cross contamination occurred during the transit.

1.13 Occurrence of Anomalous Results

Upon review of the QAQC data, minor exceedences of the groundwater samples were noted and some analytes were reported outside the holding times (pH), which was not considered to be a concern. Few total cyanide results exceeded the surrogate spike recovery limits which could be due to sample interference.

TPH concentrations were reported from rinsate water RIN3. However, silica gel clean up and re-analysis was undertaken on RIN 3 and the results indicated that 100% of previously identified TPH compounds were confirmed to be from primarily natural organic influences such as humic and fluvic acids. Although TRH fractions were reported at RIN3, based on the results of monitoring well GW09, it was confirmed that it was not contaminated due to potential insufficient decontamination process.

1.14 Overall Assessment of Data Quality

The general "rule of thumb" is that, one duplicate and split sample should be taken for every 20 samples taken (5%). An assessment of the groundwater data indicated that two duplicate and two triplicate samples were collected with only 33 water samples being analysed. This indicates that the QAQC samples were collected at an appropriate rate.



Most of the RPD calculations are considered to be within acceptable limits and the data set is also considered to be reliable with few exceedences. On the basis of the analytical data validation procedures employed and interpretation provided above, the overall quality of the analytical data produced is considered to be of an acceptable standard for interpretative use.



ATTACHMENT C1 CALIBRATION RECORDS



Equipment Calibration Record – Hanna Multi

This equipment calibration record is to be stored in your job folder

Equipment Type:	Hanna Multimeter HI 9828		
Equipment Number:	Hived from avinet. ×2	20	
Date Calibrated:	25/6/13	- <u>1</u> 2	
Calibrated By:	SFL/KK.	_(name)	
Job Number:	210074	_	

Details of Calibration:		
Temperature:	4	°C
pH at 4.01 Reading:	4.0	
pH at 7.01 Reading (or 6.88):	7.09	
ORP in Redox solution (240 mV):	240-	(mV) (Irregular)
Conductivity in 2.76 mS/cm:	1900	mS/cm
Conductivity in 12.88 mS/cm:	2.00	mS/cm
Dissolved Oxygen in 0.00 ppm in Sodium sulfate:	0	%
Dissolved Oxygen 100% Air Saturation:	_	%



Equipment Calibration Record – Hanna Multi

This equipment calibration	n record is to be stored in your job folder		
Equipment Type:	Hanna Multimeter HI 9828		
Equipment Number:	Hived fun ainmet ×2		
Date Calibrated:	26/6/13	-	
Calibrated By:	SFL (KK.	(name)	
Job Number:	210074	el.	

Details of Calibration:		
Temperature:	4	0°
pH at 4.01 Reading:	4	
pH at 7.01 Reading (or 6.88):	7.09	
ORP in Redox solution (240 mV):	240~ (mg	munins (mV)
Conductivity in 2.76 mS/cm:	1900	mS/cm
Conductivity in 12.88 mS/cm:	9.00	mS/cm
Dissolved Oxygen in 0.00 ppm in Sodium sulfate:	Ø	%
Dissolved Oxygen 100% Air Saturation:	/	%



Equipment Calibration Record – Hanna Multi

This equipment calibration record is to be stored in your job folder

Equipment Type:	Hanna Multimeter HI 9828	
Equipment Number:	Hved from armet.	ie:
Date Calibrated:	2716/13.	
Calibrated By:	SFL/14L	(name)
Job Number:	20074.	

Details of Calibration:		
Temperature:	4	°C
pH at 4.01 Reading:	4	
pH at 7.01 Reading (or 6.88):	7.09	
ORP in Redox solution (240 mV):	20-	(mV)
Conductivity in 2.76 mS/cm:	1900	mS/cm
Conductivity in 12.88 mS/cm:	9,00	mS/cm
Dissolved Oxygen in 0.00 ppm in Sodium sulfate: _	0	%
Dissolved Oxygen 100% Air Saturation:		%

Instrument YSI Quatro Pro Plus Serial No. 11K101256



Item	Test	Pass	Comments
Battery	Charge Condition	1	
	Fuses	¥	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	 ✓ 	
	Operation (segments)	1	
Grill Filter	Condition	1	
	Seal	1	
PCB	Condition	1	
Connectors	Condition	1	
Sensor	1. pH	×	
	2. mV	×	
	3. EC	×	
	4. D.O	✓	and the second
	5. Temp	✓	
Alarms	Beeper		······································
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.00		JH1866	pH 7.00
2. pH 4.00		pH 4.00		KD1211	pH 4.00
3. mV		231.14 mV		KD2047/2022	231.14 mV
4. EC		2.76 mS	1	JL2250	2.76 mS
6. D.O		0 ppm	1	CSI0715	0 ppm
7. Temp		20.3 oC		MultiTherm	20.3 oC

Calibrated by:

Peter McColl

Calibration date:

17-Jun-13

Next calibration due:

14-Dec-13
Instrument YSI Quatro Pro Plus Serial No. 11K101257



Item Test Pass Comments Battery Charge Condition 1 1 **Fuses** 1 Capacity Switch/keypad Operation 1 Intensity 1 Display 1 Operation (segments) **Grill Filter** Condition 1 Seal 1 1 PCB Condition 1 Condition Connectors 1 1. pH Sensor 1 2. mV 3. EC 1 ~ 4. D.O 1 5, Temp Alarms Beeper Settings Version Software Operation Data logger Download Operation Other tests:

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	а 19 К. П. 19	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00			pH 7.00		JH1866	pH 7.00
2. pH 4.00			pH 4.00		KD1211	pH 4.00
3. mV			235.98mV		KD1151/1152	235.98mV
4. EC			2.76 mS		JL2250	2.76 mS
6. D.O			0 ppm		CS10715	0 ppm
7. Temp			19.1 oC		MultiTherm	19.1 oC

Calibrated by:

Yu Che

Calibration date: 17-Jun-13

Next calibration due: 14-Dec-13

Instrument Interface Meter (30M) Serial No. 211087



Item	Test	Pass	Comments
Battery	Compartment	1	
	Capacity	1	
	above 7.9V		
Probe	Cleaned/Decon.	1	
	Operation		
Connectors	Condition		
Tape Check	Cleaned	✓ ✓	
Connectors	Checked for cuts		
Instrument Test	At surface level	1	
		•	
· · · · · · · · · · · · · · · · · · ·	••• ••• ••• ••• ••• •••		

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Tested by: Louis Chen

Test date:

17/06/2013

Next Test due: 16/08/2013

Oil / Water Interface Meter

Instrument	Interface Meter (50M)
Serial No.	122 007854-1



Item	Test	Pass	Comments
Battery	Compartment	 ✓ 	
	Capacity	1	
	above 7.9V		
			· · · · · · · · · · · · · · · · · · ·
Probe	Cleaned/Decon.	 ✓ 	
	Operation	 ✓ 	
Connectors	Condition	1	
		1	
Tape Check	Cleaned	1	
Connectors	Checked for cuts	✓	
	_		
Instrument Test	At surface level	✓ ₅₀	2
	*		
5 3			
· · · · · ·			

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Tested by:

Peter McColl

Test date:

19/06/2013

Next Test due:

18/08/2013



ATTACHMENT C2 SAMPLE RECEIPT NOTIFICATION





Comprehensive Report

Work Order	: EM13	06677							
Client	ENVIRO SCIENC	NMENTAL EARTH ES	Laboratory	: Enviro	ronmental Division Melbourne				
Contact	MR REGIN ORQUIZA		Contact	: Carol \	ol Walsh				
Address	FOOTS	CRAY VIC, AUSTRALIA 3011	Address	Address 2 4 vvestall Rd Springvale VIC Austr 3171			ustralia		
E-mail	ail : rorquiza@environmentalearthscience s.com			: carol.w	valsh@alsglobal.cor	n			
Telephone	lephone : +61 03 96871666			: +61-3-	8549 9608				
Facsimile	: +61 03 9	96871844	Facsimile	: +61-3-	+61-3-8549 9601				
Project	: 210074	Sth Melbourne Gasworks	Page	: 1 of 3	3				
Order number									
C-O-C number			Quote number	: EM201	2013ENVEAR0231 (ME/330/13)				
Site	:								
Sampler	: SFL/KK		QC Level	INEPM QCS3	1999 Schedule requirement	B(3) and	ALS		
Dates									
Date Samples Receiv	ed	: 24-JUN-2013	Issue Date		: 25-JUN-2013 18:1	5			
Client Requested Due Date : 02-0		: 02-JUL-2013	Scheduled Reporting	g Date	02-JUL-2013	6			
Delivery Detail	s								
Mode of Delivery		: Carrier	Temperature		: 4.5-7.0 - Ice pres	ent			
No. of coolers/boxes		: 2	No. of samples rece	ived	: 9				
Security Seal		: N/A	No. of samples anal	ysed	: 9				

General Comments

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

Address 4 Westall Rd Springvale VIC Australia 3171 | PHONE +61-3-8549 9600 | Facsimile +61-3-8549 9601 Environmental Division Melbourne ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company

Environmental 🚬

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

• No sample container / preservation non-compliance exist.

Summary of Sample(s) and Requested Analysis

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

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

If no sampling ssumed by the vill be shown	- ED041G Turbidimetric) as SO4 2 by Di	- EES Ionic Balance c Balance	- EG020F d Metals by ICPMS	- EK026SF anide by Segmented Flow An	- EK055G a as N By Discrete Analyser	- EK055G-NH4 um as N	- EP071SG ca Gel Clean Up	- EP074 (water) Drganic Compounds
t sample ID	WATER Sulfate (WATER EES Ioni	WATER Dissolve	WATER Total Cy	WATER Ammonii	WATER Ammonii	WATER TPH Silic	WATER Volatile (
		1	✓	1		1		1
	✓		✓	1	✓			✓
		✓	✓	1		1	1	1
		✓	✓	1		1	1	1
		✓	✓	1		1		1
		✓	✓	1		1	1	1
		✓	✓	1		✓	✓	✓
								✓
								1
	If no sampling ssumed by the vill be shown at sample ID	If no sampling ssumed by the vill be shown it sample ID Suffate (Turbidimetric) as SO4 2 b Untrate (Turbidimetric) as SO4 2 b Suffate (Turbidimetric) as SO4	If no sampling ssumed by the vill be shown tt sample ID MATER - ED041G Sultate (Turbidimetric) as S04 2 b) MATER - ES Ionic Balance EES Ionic Balance Sultate (Turbidimetric) as S04 2 b) MATER - ES Ionic Balance	If no sampling ssumed by the vill be shown the shown the sample ID Solutifie (Turbidimetric) as S04 2 by Di Solutifie (If no sampling ssumed by the vill be shown If no sampling sumed by the vill be shown If no sampling vill be shown If no sampling sumed by the vill be shown If no sampling sumed by the vill be shown If no sampling sumed by the vill be shown If no sampling vill be shown If no sampling sumed by the vill be shown If no sampling sumed by the vill be shown If no sampling sumed by the vill be shown If no sampling vill be shown If no sampling sumed by the vill be shown If no sampling sumed by the vill be shown If no sampling sumed by the vill be shown If no sampling vill be shown If no sampling sum sum sum sum sum sum sum sum sum sum	It no sampling ssumed by the vill be shown MATER - ED041G sumplication MATER - ED041G vill pe shown Sulfate (Tunbiumetrc) as S04 2 by Di Sulfate (Tunbiumetrc) as S	It no sampling ssumed py the vill be shown It no sampling subscrete for the shown Subscrete for the shown It no sampling source Subscrete for the shown It no sampling source It no sampling source It no sampling source It no sampling sourc	It no sampling ssumed py the vill be shown It no sampling subscrete for the subscrete for th

imetric) as SO4 2 by Discrete

by Segmented Flow Analyser

Matrix: WATER Laboratory sample ID	Client sampling date / time	Client sample ID	NATER - EP074A VOC - MAH's	NATER - TPH FPH (fractions)
EM1306677-001	24-JUN-2013 15:00	GW43	1	1
EM1306677-002	24-JUN-2013 15:00	DUP1	✓	✓
EM1306677-003	24-JUN-2013 15:00	GW39	√	1
EM1306677-004	24-JUN-2013 15:00	GW42D	√	1
EM1306677-005	24-JUN-2013 15:00	GW41	√	1
EM1306677-006	24-JUN-2013 15:00	GW23	√	1
EM1306677-007	24-JUN-2013 15:00	GW19	✓	1
EM1306677-008	24-JUN-2013 15:00	Rinsate 1	1	1
EM1306677-009	24-JUN-2013 15:00	Trip 1	1	



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

Matrix: WATER Evaluation: × = Holding time breach ; ✓ = Within holding t								
Method		Due for	Due for	Samples R	eceived	Instructions	Received	
Client Sample ID(s)	Container	extraction	analysis	Date	Evaluation	Date	Evaluation	
EA005: pH								
GW19	Clear Plastic Bottle - Natural		24-JUN-2013	24-JUN-2013	\checkmark	25-JUN-2013	*	
GW23	Clear Plastic Bottle - Natural		24-JUN-2013	24-JUN-2013	✓	25-JUN-2013	×	
GW39	Clear Plastic Bottle - Natural		24-JUN-2013	24-JUN-2013	 ✓ 	25-JUN-2013	×	
GW41	Clear Plastic Bottle - Natural		24-JUN-2013	24-JUN-2013	✓	25-JUN-2013	x	
GW42D	Clear Plastic Bottle - Natural		24-JUN-2013	24-JUN-2013	 ✓ 	25-JUN-2013	×	
GW43	Clear Plastic Bottle - Natural		24-JUN-2013	24-JUN-2013	\checkmark	25-JUN-2013	*	

Requested Deliverables

ALL INVOICES MELB ADDRESS		
- A4 - AU Tax Invoice (INV)	Email	eesvic@eesi.biz
MS SOOKFEI LEONG		
 *AU Certificate of Analysis - NATA (COA) 	Email	sleong@eesi.biz
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	sleong@eesi.biz
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	sleong@eesi.biz
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sleong@eesi.biz
- Chain of Custody (CoC) (COC)	Email	sleong@eesi.biz
- EDI Format - ENMRG (ENMRG)	Email	sleong@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	sleong@eesi.biz
REGIN ORQUIZA		
 *AU Certificate of Analysis - NATA (COA) 	Email	rorquiza@eesi.biz
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	rorquiza@eesi.biz
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	rorquiza@eesi.biz
 A4 - AU Sample Receipt Notification - Environmental HT (SRN) 	Email	rorquiza@eesi.biz
- A4 - AU Tax Invoice (INV)	Email	rorquiza@eesi.biz
- Chain of Custody (CoC) (COC)	Email	rorquiza@eesi.biz
- EDI Format - ENMRG (ENMRG)	Email	rorquiza@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	rorquiza@eesi.biz





Comprehensive Report

Work Order	: EM13	30673V		
Client	ENHIR SCIEN	ONMENTAL EART2 CES	Laboratory	Environmental Division Melbourne
Contact Address	EREGIN P.O.BO FOOT	I ORQUIZA DX 2253 SCRAY VIC, AUSTRALIA 3011	Contact Address	 Carol Walsh 4 Westall Rd Springvale VIC Australia 3171
E-mail Telephone Facsimile	: rorquiz : +61 03 : +61 03	a@eesi.biz 96871666 96871844	E-mail Telephone Facsimile	 carol.walsh@alsglobal.com +61-3-8549 9608 +61-3-8549 9601
Project Order number	200174 Sth Melbourne Gasworks		Page	: 1 of 3
C-O-C number	:		Quote number	: EM2013ENVEAR0231 (ME/330/13)
Sampler	:		QC Level	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dates				
Date Samples Received Client Requested Due Date		: 25-JUN-2013 : 03-JUL-2013	Issue Date Scheduled Reportin	: 26-JUN-2013 11:04 g Date : 03-JUL-a013
Delivery Det	ails			
Mode of Delivery		: Carrier : 2	Temperature No. of samples rece	ived : 2.8-3.6 - Ice present
Security Seal : N/A		: N/A	No. of samples anal	lysed : 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
- Smplsec reievned vt mil rolrvmyes I reyremyed mt d I recerned i ot ymt ercf
- Psemce reher yo yge Promiyune 2 osdvt b Type Rel oryymwse wesou u gvig c/ppmrvcec wremigec oh reiop pet ded gosdvt by pec ygmy gmme oii/ rred Irvor yo cmp Isecopt cyr/ iyvot cwevt breievned my yge smwormyor.f Tge mwcetie o hygvc c/ppmr. ymwse vtdvimyec ygmymsscmpl sec gmne weet reievned u vygvt yge rei op pet ded gosdvt byvpec hor yge mt ms cvc re|/ecyedf
- Psemce dvreiymt. |/ ervec resnyed yo cmp I se i ot dvyot qt / p wervt b qwremkmbec yo Peyer Rmnsif
- At ms yimsu ork hor ygvc u ork order u vaswe i ot d/iyed my ALS SIrvt bnmsef
- Sample Disposal Aqueous (14 days), Solid (60 days) from date of completion of work order.

Addrecc 4 Westall Rd Springvale VIC Australia 3171 +P2 ONE 861-3-V549 9600 +Fmi cvp ve +61-3-8549 9601 Environmental Division Melbourne ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company



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

No cmp Ise iotymater qI recernmy ot tot-iop Isantie exvcyf

Summary of Sample(s) and Requested Analysis

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

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

Matrix: WATER

laboratory for p bracketed without a	processing purposes a time component.	s and will be shown	Balance	ICPMS	gmented	IH4	ater) npounds	
Matrix: WATER			- EES Ionic ic Balance	- EG020F ed Metals by	- EK026SF anide by Se	- EK055G-N ium as N	- EP074 (wi Organic Con	TPH actions)
Laboratory sample ID	Client sampling date / time	Client sample ID	WATER EES Ion	WATER Dissolve	WATER Total Cy	WATER	WATER Volatile	WATER TPH (fra
EM1306738-001	25-JUN-2013 15:00	GW18	1	1	1	1	√	1
EM1306738-002	25-JUN-2013 15:00	GW01	1	1	1	1	√	1
EM1306738-003	25-JUN-2013 15:00	GW40	1	1	1	1	✓	1
EM1306738-004	25-JUN-2013 15:00	GW28	1	1	1	1	√	1
EM1306738-005	25-JUN-2013 15:00	GW35	1	1	1	1	✓	1
EM1306738-006	25-JUN-2013 15:00	GW22	1	1	1	1	1	1
EM1306738-007	25-JUN-2013 15:00	Rinsate 2					✓	1
EM1306738-008	25-JUN-2013 15:00	Trip 2					1	
EM1306738-009	25-JUN-2013 15:00	Trip 3					✓	
EM1306738-010	25-JUN-2013 15:00	Dup 2		1	1		1	1

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

Matrix: WATER	x: WATER Evaluation: ★ = Holding time breach ; ✓ = Within holding t								
Method		D/ehor	D/ehor	Smplsec R	eievned	ltcyr/iyvotc	Reievned		
CsvetySmplselD(c)	Cotymter	exyrmiyvot	mtmscvc	Dmye	Enms/myvot	Dmye	Enms/myvot		
EA005: 2									
GW01	Clear Plastic Bottle - Natural		25-JUN-2013	25-JUN-2013	 ✓ 	26-JUN-2013	×		
GW18	Clear Plastic Bottle - Natural		25-JUN-2013	25-JUN-2013	✓	26-JUN-2013	x		
GW22	Clear Plastic Bottle - Natural		25-JUN-2013	25-JUN-2013	✓	26-JUN-2013	×		
GW28	Clear Plastic Bottle - Natural		25-JUN-2013	25-JUN-2013	✓	26-JUN-2013	x		
GW35	Clear Plastic Bottle - Natural		25-JUN-2013	25-JUN-2013	 ✓ 	26-JUN-2013	x		
GW40	Clear Plastic Bottle - Natural		25-JUN-2013	25-JUN-2013	\checkmark	26-JUN-2013	x		

le by Segmented Flow Analyser



Requested Deliverables

111	INHOICES			ESS
ALL.	INHUICES	IVICLD	ADDR	E 33

ALL INHOICES MELD ADDRESS		
- A4 - AU Tax Invoice (INV)	Email	eesvic@eesi.biz
MS SOOKFEI LEONG		
 *AU Certificate of Analysis - NATA (COA) 	Email	sleong@eesi.biz
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	sleong@eesi.biz
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	sleong@eesi.biz
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sleong@eesi.biz
- Chain of Custody (CoC) (COC)	Email	sleong@eesi.biz
- EDI Format - ENMRG (ENMRG)	Email	sleong@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	sleong@eesi.biz
REGIN ORQUIZA		
 *AU Certificate of Analysis - NATA (COA) 	Email	rorquiza@eesi.biz
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- A4 - AU Tax Invoice (INV)	Email	rorquiza@eesi.biz
- Chain of Custody (CoC) (COC)	Email	rorquiza@eesi.biz
- EDI Format - ENMRG (ENMRG)	Email	rorquiza@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	rorquiza@eesi.biz





Comprehensive Report

Work Order	: EM13	06766							
Client		ONMENTAL EARTH	Laboratory	: Enviro	ronmental Division Melbourne				
Contact	REGIN	ORQUIZA	Contact	: Carol \	ol Walsh				
Address	: P.O.BC FOOTS	0X 2253 SCRAY VIC, AUSTRALIA 3011	Address	: 4 Wes 3171	/estall Rd Springvale VIC Australia 1				
E-mail	: rorquiza	a@eesi.biz	E-mail	: carol.v	l.walsh@alsglobal.com				
Telephone	: +61 03	96871666	Telephone	: +61-3-	8549 9608				
Facsimile	: +61 03	96871844	Facsimile	: +61-3-	3-8549 9601				
Project	: 210074	Sth Melbourne Gasworks	Page	: 1 of 2	2				
Order number	:								
C-O-C number	:		Quote number	: EM201	2013ENVEAR0231 (ME/330/13)				
Site	:								
Sampler	: SFL/KK		QC Level	: NEPM QCS3	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement				
Dates									
Date Samples Rec	eived	: 26-JUN-2013	Issue Date		: 26-JUN-2013 13:4	7			
Client Requested Due Date		: 03-JUL-2013	Scheduled Reportin	ng Date	032- J L2J013	3			
Delivery Det	ails								
Mode of Delivery : Carrier		: Carrier	Temperature		: 3.1-5.5 - Ice present				
No. of coolers/boxe	es	: 1	No. of samples rece	eived	: 4				
Security Seal : N/A			No of samples ana	lysed	· A				

General Comments

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

Address 4 Westall Rd Springvale VIC Australia 3171 | PHONE +612325549 9600 | Facsimile +61-3-8549 9601 Environmental Division Melbourne ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company

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

• No sample container / preservation non2compliance exist.

Summary of Sample(s) and Requested Analysis

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

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

Matrix: WATER

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - E EES Ionic E	WATER - E Dissolved N	WATER - E Total Cyani	WATER - E Ammonium	WATER - E TPH Silica (WATER - E Volatile Org	WATER - T TPH (fractic
EM1306766-001	25-JUN-2013 15:00	GW08	✓	✓	✓	✓	✓	✓	✓
EM1306766-002	25-JUN-2013 15:00	GW37	1	✓	✓	1	1	✓	✓
EM1306766-003	25-JUN-2013 15:00	GW44	1	✓	✓	1	1	✓	✓
EM1306766-004	25-JUN-2013 15:00	Trip 4						1	

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

Matrix: WATER Evaluation: * = Holding time breach ; \checkmark = Within holding time							in holding time
Method		Due for Due for extraction analysis		Samples Received		Instructions I	Received
Client Sample ID(s)	Container			Date	Evaluation	Date	Evaluation
EA005: pH							
GW08	Clear Plastic Bottle - Natural		25-JUN-2013	26-JUN-2013	×	26-JUN-2013	×
GW37	Clear Plastic Bottle - Natural		25-JUN-2013	26-JUN-2013	×	26-JUN-2013	×
GW44	Clear Plastic Bottle - Natural		25-JUN-2013	26-JUN-2013	×	26-JUN-2013	×

ES Ionic Balance

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as N

anic Compounds

Hc (su

P074 (water)

Sel Clean Up

P071SG

etals by ICPMS

K026SF

Requested Deliverables

ALL INVOICES MELB ADDRESS		
- A4 - AU Tax Invoice (INV)	Email	eesvic@eesi.biz
MS SOOKFEI LEONG		
 *AU Certificate of Analysis - NATA (COA) 	Email	sleong@eesi.biz
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	sleong@eesi.biz
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	sleong@eesi.biz
 A4 - AU Sample Receipt Notification - Environmental HT (SRN) 	Email	sleong@eesi.biz
 Chain of Custody (CoC) (COC) 	Email	sleong@eesi.biz
- EDI Format - ENMRG (ENMRG)	Email	sleong@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	sleong@eesi.biz
REGIN ORQJIZA		
 *AU Certificate of Analysis - NATA (COA) 	Email	rorquiza@eesi.biz
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- EDI Format - ENMRG (ENMRG)	Email	rorquiza@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	rorquiza@eesi.biz





Comprehensive Report

Work Order	: EM130	67VH							
Client	EN2 IRON	NMENTAL EART- ES	Laboratory	: Enviror	rironmental Division Melbourne				
Contact	: MR REG	IN ORQUIZA	Contact	: Carol V	Valsh				
Address	EP.O.BOX FOOTSC	C 2253 RAY VIC, AUSTRALIA 3011	Address	: 4 West 3171	/estall Rd Springvale VIC Australia /1				
E-mail	∶rorquiza(s.com	Denvironmentalearthscience	E-mail	: carol.w	l.walsh@alsglobal.com				
Telephone	: +61 03 9	6871666	Telephone	: +61-3-8	3549 9608				
Facsimile	: +61 03 9	6871844	Facsimile	: +61-3-8	·3-8549 9601				
Project Order number	210074 Sth Melbourne Gasworks		Page	: 1 of 3	3				
C-O-C number	:		Quote number	: EM201	2013ENVEAR0231 (ME/330/13)				
Site Sampler	: : SFL / KK		QC Level	: NEPM QCS3 I	NEPM 1999 Schedule B(3) and ALS QCS3 requirement				
Dates									
Date Samples Receive	ed	: 26-JUN-2013	Issue Date		: 28-JUN-2013 12:11	1			
Client Requested Due Date		: 04-JUL-2013	Scheduled Reporting	Date	¹ 03 JJa LJn01 3				
Delivery Detail	s								
Mode of Delivery		: Carrier	Temperature		: 4.5-5.0 - Ice pres	ent			
No. of coolers/boxes		: 1	No. of samples received	ved	: 9				
Security Seal		: N/A	No. of samples analysed		: 9				

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
- Spl soci revented ny pssrosrnp.eof sre.rep.ed pyd sreierted voy.pnyerih
- Pæpie reger .o .be Propv.rte ordnyw Tri e Resor. .puœ ueco/ / brvb iql l prniei urepvbei og revol l eyded bordnyw.ni ei .bp. bpte ovvqrred srnor .o ipl sœi|nyi.rqv.noyi uenyw revented p. .be quuorp.orfh Tbe puieyve og.bni iql l prf .puœ nydnvp.ei .bp. pocipl sœi bpte ueey revented / nbny .be revol l eyded bordnyw.ni ei gor .be pypofini re+qei.edh
- Poepie drrev. pyf + qernei reqp.ed.oipl soe voydnnoy | yql uernyw | urepkpwei .o Pe.er Rpt or vh
- Aypof.nvpc/ork.gor.bni/ork.order/nacue.voydqv.ed.p. ALS Ssrnywt.paeh
- Sample Disposal Aqueous (14 days), Solid (60 days) from date of completion of work order.

Addrei i 4 Westall Rd Springvale VIC Australia 3171 8P- ONE 561.8JH49V V600 8Fpvi nt me +61-3-8549 9601 Environmental Division Melbourne ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company

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

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Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package. If no sampling time is provided, the sampling time will

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

Matrix: WATER			- EES I ic Balar	- EG02 d Metal	- EK02 anide b	- EK05 a as N I	- EK05 um as N	- EP07 ca Gel (- EP07. Drganic	- TPH
Laboratory sample ID	Client sampling date / time	Client sample ID	WATER EES Ioni	WATER	WATER Total Cy	WATER	WATER	WATER TPH Silic	WATER Volatile (WATER
EM1306798-001	26-JUN-2013 15:00	GW02	1	1	1		1		1	1
EM1306798-002	26-JUN-2013 15:00	GW07	 ✓ 	✓	1		1		1	1
EM1306798-003	26-JUN-2013 15:00	GW09	 ✓ 	✓	1		✓		1	1
EM1306798-004	26-JUN-2013 15:00	GW29	 ✓ 	1	1		1		1	1
EM1306798-005	26-JUN-2013 15:00	GW30	 ✓ 	✓	1		1		1	1
EM1306798-006	26-JUN-2013 15:00	GW38	1	✓	1		1	1	1	1
EM1306798-007	26-JUN-2013 15:00	RIN 3				1				
EM1306798-008	26-JUN-2013 15:00	RIN 4							1	1
EM1306798-009	26-JUN-2013 15:00	TRIP 5							1	

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

Matrix: WATER	TER Evaluation: ★ = Holding time breach ; ✓ = Within holding t							
Method		Dqe gor	Dqe gor	Spl scei Revented		lyi.rqv.royi	i Revert ed	
Coney. Spl soe ID(i)	Coy.pryer	ex.rpv.roy	pypofini	Dp.e	Et poqp.roy	Dp.e	Et pcqp.roy	
EA004: s-								
GW02	Clear Plastic Bottle - Natural		26-JUN-2013	26-JUN-2013	✓	27-JUN-2013	×	
GW07	Clear Plastic Bottle - Natural		26-JUN-2013	26-JUN-2013	\checkmark	27-JUN-2013	×	
GW09	Clear Plastic Bottle - Natural		26-JUN-2013	26-JUN-2013	\checkmark	27-JUN-2013	×	
GW29	Clear Plastic Bottle - Natural		26-JUN-2013	26-JUN-2013	\checkmark	27-JUN-2013	×	
GW30	Clear Plastic Bottle - Natural		26-JUN-2013	26-JUN-2013	\checkmark	27-JUN-2013	×	
GW38	Clear Plastic Bottle - Natural		26-JUN-2013	26-JUN-2013	\checkmark	27-JUN-2013	*	

Segmented Flow Analyser

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5G-NH4

spunoduo

(water)

1SG Clean Up



Requested Deliverables

ALL IN2OICES MELB ADDRESS

- A4 - AU Tax Invoice (INV)	Email	eesvic@eesi.biz
MS SOOKFEI LEONG		
 *AU Certificate of Analysis - NATA (COA) 	Email	sleong@eesi.biz
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	sleong@eesi.biz
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	sleong@eesi.biz
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sleong@eesi.biz
- Chain of Custody (CoC) (COC)	Email	sleong@eesi.biz
- EDI Format - ENMRG (ENMRG)	Email	sleong@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	sleong@eesi.biz
REGIN ORQa IZA		
 *AU Certificate of Analysis - NATA (COA) 	Email	rorquiza@eesi.biz
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	rorquiza@eesi.biz
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	rorquiza@eesi.biz
 A4 - AU Sample Receipt Notification - Environmental HT (SRN) 	Email	rorquiza@eesi.biz
- Chain of Custody (CoC) (COC)	Email	rorquiza@eesi.biz
- EDI Format - ENMRG (ENMRG)	Email	rorquiza@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	rorquiza@eesi.biz





Comprehensive Report

Work Order	: EM1	306820							
Client	ENVIF SCIEN	RONMENTAL EARTH	Laboratory	Environmental Division Melbourne					
Contact Address	EREGII P.O.B FOOT	N ORQUIZA OX 2253 TSCRAY VIC, AUSTRALIA 3011	Contact Address	 Carol Walsh 4 Westall Rd Springvale VIC Australia 3171 					
E-mail Telephone Facsimile	: rorqui : +61 0 : +61 0	za@eesi.biz 3 96871666 3 96871844	E-mail Telephone Facsimile	 carol.walsh@alsglobal.com +61-3-8549 9608 +61-3-8549 9601 					
Project Order number	: 21007	4 Sth Melbourne Gasworks	Page	: 1 of 2					
C-O-C number Site	:		Quote number	EM2013ENVEAR0231 (ME/330/13)					
Sampler	: SFL /	КК	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement					
Dates									
Date Samples Rec	eived	: 27-JUN-2013	Issue Date	: 28-JUN-2013 14:14					
Client Requested Due Date :		: 04-JUL-2013	Scheduled Reporting	Date : 04-JUL-2013					
Delivery Det	ails								
Mode of Delivery : Carrier		: Carrier	Temperature	: 4.0-6.0 - Ice present					
No. of coolers/boxe	es	: 1	No. of samples receiv	red : 6					
Security Seal : N/A			No. of samples analy	sed : 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
- Samples received in appropriately pretreated and preserved containers.
- Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
- Please direct any queries related to sample condition / numbering / breakages to Peter Ravlic.
- Analytical work for this work order will be conducted at ALS Springvale.
- Sample Disposal Aqueous (14 days), Solid (60 days) from date of completion of work order.

Address 4 Westall Rd Springvale VIC Australia 3171 | PHONE +61-3-8549 9600 | Facsimile +61-3-8549 9601 Environmental Division Melbourne ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company

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

No sample container / preservation non-compliance exist.

Summary of Sample(s) and Requested Analysis

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

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

Matrix: WATER

laboratory for p bracketed without Matrix: WATER	processing purposes a time component.	s and will be shown	- EES Ionic Balance ic Balance	- EG020F d Metals by ICPMS	- EK026SF anide by Segmented	- EK055G-NH4 um as N	- EP071SG ca Gel Clean Up	- EP074 (water) Organic Compounds	- TPH ctions)
Laboratory sample ID	Client sampling date / time	Client sample ID	WATER EES Ion	WATER Dissolve	WATER Total Cy	WATER Ammoni	WATER TPH Sili	WATER Volatile (WATER TPH (fra
EM1306820-001	27-JUN-2013 15:00	GW34	1	1	✓	✓		1	✓
EM1306820-002	27-JUN-2013 15:00	GW33	1	1	1	1		1	✓
EM1306820-003	27-JUN-2013 15:00	GW24	1	1	1	1	1	1	1
EM1306820-004	26-JUN-2013 15:00	GW06	1	1	1	1		1	1
EM1306820-005	26-JUN-2013 15:00	Trip 6						1	
EM1306820-006	26-JUN-2013 15:00	GW26	1	1	1	1		1	1

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

Matrix: WATER				Evaluation: ×	= Holding tim	e breach ; ✓ = With	in holding time
Method		Due for	Due for	Samples R	eceived	Instructions F	Received
Client Sample ID(s)	Container	extraction analysis		Date	Evaluation	Date	Evaluation
EA005: pH							
GW06	Clear Plastic Bottle - Natural		26-JUN-2013	27-JUN-2013	×	27-JUN-2013	×
GW26	Clear Plastic Bottle - Natural		26-JUN-2013	27-JUN-2013	×	27-JUN-2013	×

le by Segmented Flow Analyser

Requested Deliverables

ALL INVOICES MELB ADDRESS		
- A4 - AU Tax Invoice (INV)	Email	eesvic@eesi.biz
MS SOOKFEI LEONG		
 *AU Certificate of Analysis - NATA (COA) 	Email	sleong@eesi.biz
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	sleong@eesi.biz
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	sleong@eesi.biz
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sleong@eesi.biz
- Chain of Custody (CoC) (COC)	Email	sleong@eesi.biz
- EDI Format - ENMRG (ENMRG)	Email	sleong@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	sleong@eesi.biz
REGIN ORQUIZA		
 *AU Certificate of Analysis - NATA (COA) 	Email	rorquiza@eesi.biz
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	rorquiza@eesi.biz
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	rorquiza@eesi.biz
 A4 - AU Sample Receipt Notification - Environmental HT (SRN) 	Email	rorquiza@eesi.biz
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- EDI Format - ENMRG (ENMRG)	Email	rorquiza@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	rorquiza@eesi.biz





Comprehensive Report

Work Order	: EM1306	57V1						
Client	ENHIRONMENTAL EART2		Laboratory	: Enviror	ronmental Division Melbourne			
Contact	: MR REGIN	I ORQUIZA	Contact	: Carol V	/alsh			
Address	P.O.BOX FOOTSCF	2253 RAY VIC, AUSTRALIA 3011	Address	: 4 West 3171	4 Westall Rd Springvale VIC Australia 3171			
E-mail	: rorquiza@ s.com	environmentalearthscience	E-mail	: carol.w	l.walsh@alsglobal.com			
Telephone	: +61 03 968	371666	Telephone	: +61-3-8	3-8549 9608			
Facsimile	: +61 03 968	371844	Facsimile	: +61-3-8549 9601				
Project	: 200174 St	h Melbourne Gasworks	Page	: 1 of 2	2			
Order number	:							
C-O-C number	:		Quote number	: EM201	EM2013ENVEAR0231 (ME/330/13)			
Site	:							
Sampler	: SFL, KK		QC Level	: NEPM QCS3 r	NEPM 1999 Schedule B(3) and ALS QCS3 requirement			
Dates								
Date Samples Receive	d :	27-JUN-2013	Issue Date		: 28-JUN-2013 12:17			
Client Requested Due	Date	05-JUL-2013	Scheduled Reporting Date : 0- JJa LJn013					
Delivery Details	s							
Mode of Delivery	Mode of Delivery : Carrier		Temperature		: 4.5-5.0 - Ice present			
No. of coolers/boxes	:	1	No. of samples received		: 6			
Security Seal	:	N/A	No. of samples analysed : 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
- Spl soci revented ny pssrosrnp.eof sre.rep.ed pyd sreierted voy.pnyerih
- Pæpie reger .o .be Propv.rte 2 ocdnyw Tri e Resor. .puœ ueco/ / brvb i ql l prriei urepvbei og revol l eyded bocdnyw.ni ei .bp. bpte ovvqrred srnor .o i pl sœi |nyi .rqv.noyi uenyw revented p. .be quuorp.orfh Tbe pui eyve og.bri i ql l prf .puœ nydnvp.ei .bp. poci pl sœi bpte ueey revented / nbny .be revol l eyded bocdnyw.ni ei gor .be pypofini re+qei.edh
- Poepie drrev. pyf + qernei reqp.ed.oipl soe voydnnoy | yql uernyw | urepkpwei .o Pe.er Rpt or vh
- Aypof.nvpc/ork.gor.bni/ork.order/nacue.voydqv.ed.p. ALS Ssrnywt.paeh
- Sample Disposal Aqueous (14 days), Solid (60 days) from date of completion of work order.

Addrei i 4 Westall Rd Springvale VIC Australia 3171 8P2 ONE 561.3.Jr. 49 9600 8Fpvi nt me +61-3-8549 9601 Environmental Division Melbourne ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company

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

• No ipl sce voy.pnyer | sreiert p.noy yoyJvol scrpyve exri.h

Summary of Sample(s) and Requested Analysis

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

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

Matrix: WATER

laboratory for p bracketed without a Matrix: WATER	processing purposes a time component.	s and will be shown	- EES Ionic Balance ic Balance	- EG020F d Metals by ICPMS	- EK026SF anide by Segmented	- EK055G-NH4 um as N	- EP074 (water) Drganic Compounds	- TPH ctions)
Laboratory sample ID	Client sampling date / time	Client sample ID	WATER EES Ioni	WATER Dissolve	WATER Total Cy	WATER Ammonii	WATER Volatile (WATER TPH (fra
EM1306871-001	27-JUN-2013 15:00	GW10	✓	1	✓	1	✓	✓
EM1306871-002	27-JUN-2013 15:00	GW31	✓	1	1	1	1	✓
EM1306871-003	27-JUN-2013 15:00	GW32	✓	1	1	1	1	1
EM1306871-004	27-JUN-2013 15:00	GW36	1	1	1	1	1	1
EM1306871-005	27-JUN-2013 15:00	RIN4					✓	✓
EM1306871-006	27-JUN-2013 15:00	Trip 7					1	

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

Matrix: WATER				Evaluation: ×	= Holding tim	ie breach ; ✓ = With	in holding time
Method		Dqe gor	Dqe gor	SplsceiR	Revented Iyi.rqv.noyi Reve		Revert ed
Corey. Spl soe ID(i)	Coy.pryer	ex.rpv.roy	ex.rpv.noy pypofini		Et poqp.roy	Dp.e	Et poqp.roy
EA00-: s2							
GW10	Clear Plastic Bottle - Natural		27-JUN-2013	27-JUN-2013	✓	28-JUN-2013	×
GW31	Clear Plastic Bottle - Natural		27-JUN-2013	27-JUN-2013	✓	28-JUN-2013	×
GW32	Clear Plastic Bottle - Natural		27-JUN-2013	27-JUN-2013	✓	28-JUN-2013	×
GW36	Clear Plastic Bottle - Natural		27-JUN-2013	27-JUN-2013	\checkmark	28-JUN-2013	×

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Requested Deliverables

ALL INHOICES MELB ADDRESS		
- A4 - AU Tax Invoice (INV)	Email	eesvic@eesi.biz
MS SOOKFEI LEONG		
 *AU Certificate of Analysis - NATA (COA) 	Email	sleong@eesi.biz
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	sleong@eesi.biz
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	sleong@eesi.biz
 A4 - AU Sample Receipt Notification - Environmental HT (SRN) 	Email	sleong@eesi.biz
 Chain of Custody (CoC) (COC) 	Email	sleong@eesi.biz
- EDI Format - ENMRG (ENMRG)	Email	sleong@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	sleong@eesi.biz
REGIN ORQa IZA		
 *AU Certificate of Analysis - NATA (COA) 	Email	rorquiza@eesi.biz
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	rorquiza@eesi.biz
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- EDI Format - ENMRG (ENMRG)	Email	rorquiza@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	rorquiza@eesi.biz





Comprehensive Report

Work Order	: EM1	306806		
Client	EN2IR SCIEN	ONMENTAL EARTV	Laboratory	Environmental Division Melbourne
Contact Address	EREGIN P.O.B FOOT	N ORQUIZA OX 2253 SCRAY VIC, AUSTRALIA 3011	Contact Address	 Carol Walsh 4 Westall Rd Springvale VIC Australia 3171
E-mail Telephone Facsimile	: rorquiz : +61 03 : +61 03	za@eesi.biz 3 96871666 3 96871844	E-mail Telephone Facsimile	: carol.walsh@alsglobal.com : +61-3-8549 9608 : +61-3-8549 9601
Project Order number	: 20017	4 Sth Melbourne Gasworks	Page	: 1 of 2
C-O-C number Site	:		Quote number	EM2013ENVEAR0231 (ME/330/13)
Sampler	: SFL/K	К	QC Level	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dates				
Date Samples Rec	eived	: 28-JUN-2013	Issue Date	: 28-JUN-2013 17:13
Client Requested I	Requested Due Date : 05-JUL-2013		Scheduled Reporting	g Date 0H4- J L4U013
Delivery Det	ails			
Mode of Delivery : Carrier		Temperature	: 0.6-1.4 - Ice present	
No. of coolers/boxe	es	: 1	No. of samples recei	ived : 4
Security Seal : Intact.		No. of samples analy	ysed : 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
- Samples received in appropriately pretreated and preserved containers.
- Please refer to the Proactive Volding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
- Please direct any queries related to sample condition / numbering / breakages to Peter Ravlic.
- Analytical work for this work order will be conducted at ALS Springvale.
- Sample Disposal Aqueous (14 days), Solid (60 days) from date of completion of work order.

Address 4 Westall Rd Springvale VIC Australia 3171 PVONE +614345H98 8600 Facsimile +61-3-8549 9601 Environmental Division Melbourne ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company

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

• No sample container / preservation non4compliance exist.

Summary of Sample(s) and Requested Analysis

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

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

Matrix: WATER

laboratory for p bracketed without Matrix: WATER	processing purposes a time component.	s and will be show	- EES Ionic Balance ic Balance	- EG020F d Metals by ICPMS	- EK026SF anide by Segmented	- EK055G-NH4 um as N	- EP074 (water) Organic Compounds	- TPH ctions)
Laboratory sample ID	Client sampling date / time	Client sample ID	WATER EES Ion	WATER	WATER Total Cy	WATER Ammoni	WATER Volatile	WATER TPH (fra
EM1306906-001	27-JUN-2013 15:00	GW15	1	✓	1	1	1	1
EM1306906-002	27-JUN-2013 15:00	GW25	1	1	1	1	1	1
EM1306906-003	27-JUN-2013 15:00	GW05	1	1	1	1	✓	1
EM1306906-004	27-JUN-2013 15:00	Trip 8					1	

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

Matrix: WATER				Evaluation: ×	= Holding tim	ne breach ; ✓ = With	in holding time
Method		Due for	Due for	Samples R	eceived	Instructions I	Received
Client Sample ID(s)	Container	extraction analysis		Date	Evaluation	Date	Evaluation
EA00H: pV							
GW05	Clear Plastic Bottle - Natural		27-JUN-2013	28-JUN-2013	×	28-JUN-2013	×
GW15	Clear Plastic Bottle - Natural		27-JUN-2013	28-JUN-2013	×	28-JUN-2013	×
GW25	Clear Plastic Bottle - Natural		27-JUN-2013	28-JUN-2013	×	28-JUN-2013	×

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Hc (su

Requested Deliverables

ALL IN2 OICES MELB ADDRESS		
- A4 - AU Tax Invoice (INV)	Email	eesvic@eesi.biz
MS SOOKFEI LEONG		
 *AU Certificate of Analysis - NATA (COA) 	Email	sleong@eesi.biz
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	sleong@eesi.biz
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	sleong@eesi.biz
 A4 - AU Sample Receipt Notification - Environmental HT (SRN 	Email	sleong@eesi.biz
 Chain of Custody (CoC) (COC) 	Email	sleong@eesi.biz
- EDI Format - ENMRG (ENMRG)	Email	sleong@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	sleong@eesi.biz
REGIN ORQJIZA		
 *AU Certificate of Analysis - NATA (COA) 	Email	rorquiza@eesi.biz
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	rorquiza@eesi.biz
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	rorquiza@eesi.biz
- A4 - AU Sample Receipt Notification - Environmental HT (SRN	Email	rorquiza@eesi.biz
- A4 - AU Tax Invoice (INV)	Email	rorquiza@eesi.biz
 Chain of Custody (CoC) (COC) 	Email	rorquiza@eesi.biz
- EDI Format - ENMRG (ENMRG)	Email	rorquiza@eesi.biz
- EDI Format - ESDAT (ESDAT)	Email	rorquiza@eesi.biz



ABN – 50 005 085 521 e.

e.mail : enviro@mgtlabmark.com.au

 Melbourne
 3-5 Kingston Town Close

 3-5 Kingston Town Close
 Oakleigh Vic 3166

 Phone: +61 3 8564 5000
 NATA # 1261

 Site # 1254 & 14271
 Site # 1254 & 14271

Sydney Unit F6, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	Environmental Earth Sciences VIC
Contact name:	Regin Orquiza
Client job number:	210074 5TH MELBOURNE GASWORDS
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Jun 26, 2013 1:30 PM
Eurofins mgt reference:	383984

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- 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.
- \square All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Organic samples had Teflon liners.
- 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:

Adrian Tabacchiera on Phone : (+61) (3) 8564 5000 or by e.mail: AdrianTabacchiera@eurofins.com.au

Results will be delivered electronically via e.mail to Regin Orquiza - rorquiza@eesi.biz.

Eurofins | mgt Sample Receipt



Environmental Laboratory Air Analysis Water Analysis Soil Contamination Analysis

NATA Accreditation Stack Emission Sampling & Analysis Trade Waste Sampling & Analysis Groundwater Sampling & Analysis



38 Years of Environmental Analysis & Experience

deven 26/6 1:30 pm EF/MGT

NAMU (AUN 2616, 12-00

Example in the second state of the second s COMMENTSISPECIAL HANDLINGISTORAGE OR DISPOSAL: Email Involce to : rerquiza@essicostracting.com COC emailed to ALS? (YES / HO) PROJECT: 210074 5th Melbourne Gaewords OFFICE: 10 MARIBYRNONG RO, FOOTSCRAY, VIC. 30[1 ALS USE ONLY imail Reports to : rorquiza@eesicontracting.com and sleong@eesi.biz SVMPLER: PROJECT MANAGEN: REGIN ORQUZA DRDER NUMBER: CLIENT: ENMROHMENTAL EARTH SCIENCES LAB ID E 5 £ f 6 5 5 G -0 09 GW22 GWWD GWIS L'dur. 1002 GWDS GM/28 CW01 Rinsole 2 ENfranto Junp2 811/12 SAMPLEID MATRIX Sold(S) VALATIVA 2574/13 27 DATE / TIME 25/05/2013 25062093 2540522013 25/06/2013 25/06/2013 25/06/2013 25/05/2013 25/06/2013 2506/2013 6/1/100 EDD FORMAT (or default): SAMPLER MOBILE: CONTACT PIE \$338 4403 NATRIX (Standard TAT may be longer for some tests e.g., USta Trace Organitzs) 3 ALS QUOTE NO.1 MEDDON'S TURNAROUND REQUIREMENTS : ¥ ≴ z ¥ ¥ z \$ \$ ŧ (refer to codes bebm) En (Aus CONTAINER INFORMATION 25/1/15 TOTAL SLoong DATE/THE 100010113-011 RELINGUISHED BY: -+ N ø . . • -. EES IONIC BALANCE SUITE - includes pH, TDS, Ca, Mg, Na, K, CI, SO4, Aik, F, NO3, Reactive P, Ammonia AUAL YSIS RECORED Including SUTES (18, Suite Codes must be listed to straid unite price) ж ю ж × × н Vitions Marke are reported, specify Tetral Davidmesi (totke impured) or Citerativest ("etc. nixed bottle respond Ammonium (field pH and field temp. must be recorded on the COC) ж × × ж ж ы RECEIVED BY: 254013-3044 DATENTINE -1 2 3 4 5 Dissolved metals - Al, As, Cd, Cu, Fe, Pb, Ni, Zn, Co, Se, B & Mn × × × COC SECONDERICE HUMBER н н × × × ALS Courier • (Dirde) X × ж × × × × × Total Cyanide × × * × × × × × × × ж EP074A - MAH × × -× × × × × × . H RELINQUISHED BY: 4 EP074H - Naphthalene only DATENIME ж Other commend Random Sample Temperature on Receipt The set of the set of the second set of the second se X × FOR LABORATORY USE ONLY, (Circle) × × TPH (C6-C36) plus TRH (C6-C40) × × × × × Silica gel clean up - on SV TPH -TPH (C10-C36) and TRH(C10-C40) t やや いっち 1035 21 b RECEIVEDEN 280 547 2 52 5 E field pH Additional I S 記書 17.0 E 10.0 17.4 Ŧ = i. Field temp op Sex Po w 5 2 Telephone : + 61-3-8549 Environmental Divi EM13067; 行 34 v Work Order Melbourne đ MGT

Coc renewed 25/06/13 15:36

Rr

AL

CHAIN OF CUSTODY

O Sydery 372701rsteel PM Service120721316 D. Bankawa 35 Daniel D. Daffeel OCD-453 Pm 45:05:04 Clobe Landers and regelement and PM 3233 2222 Exercise Initial-Regelement D. Hereards 7. Ranargar RK Workshold 2334 Ph 22 1972 5733 E. Sanargarta Annual Schull Ph 2010

CCD-453 D. Helineous 24 Stando 54 Spring 44 Statistics 311 CCD-453 Annual Coll VKD5 Statistics Collocation Coll Dire CCD 4118 D. Actived 2: 15 Reports F. Provids Victoria 14 CCD 4118 Ph. 61 Phys. Rev. 15 Reports F. Provids Phys. Rev. B 2012 (2018) E. educational science (2018)

Couper States Managements

Ret

Raymond Thai

From: Carol Walsh Sent: Wednesday, 26 June 2013 9:16 AM Samples Melbourne To: REVISED COC - EM1306738-ENVIROMENTAL EARTH SCIENCES Subject: img-626090130.pdf Attachments: Importance: High ATTACHED REVISED COC. Please send the SPLIT 2 sample to MGT as per COC. Ş------Original Message-----From: Regin Orquiza [mailto:rorquiza@eesicontracting.com] Sent: Wednesday, 26 June 2013 9:14 AM To: Carol Walsh Subject: RE: ISSUES - EM1306738-ENVIROMENTAL EARTH SCIENCES Hi Carol, Please find the attached updated CoC showing the dup/split 2 required analytes. Please send the Split 2 sample to MGT. Regards Regin Regin Orquiza - Senior Environmental Engineer PO Box 2253, Footscray, Victoria 3011 p: 03 9687 1666 d: 03 8398 4403 m: 0448 888 593 f: 03 9687 1844 rorquiza@environmentalearthsciences.com www.environmentalearthsciences.com

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P Please consider the environment before printing this e-mail

-----Original Message-----From: Carol Walsh [mailto:Carol.Walsh@alsglobal.com] Sent: Wednesday, 26 June 2013 8:50 AM To: Regin Orquiza Subject: ISSUES - EM1306738-ENVIROMENTAL EARTH SCIENCES Regin For this attached work order, EM1306738, we have received two extra sample - DUP 2 & SPLIT 2 .

Please advise if any analysis is required on these samples, or should SPLIT 2 be sent off to another lab.

Refi

Kind Regards

Carol Walsh Senior Client Services Officer ALS | Environmental Division 4 Westall Rd Springvale, VIC. 3171 Australia

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Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	Environmental Earth Sciences VIC
Contact name:	Regin Orquiza
Client job number:	210074 STH MELBOURNE GASWORKS
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Jun 25, 2013 3:39 PM
Eurofins mgt reference:	383844

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- 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.
- \square All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Organic samples had Teflon liners.
- 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:

Adrian Tabacchiera on Phone : (+61) (3) 8564 5000 or by e.mail: AdrianTabacchiera@eurofins.com.au

Results will be delivered electronically via e.mail to Regin Orquiza - rorquiza@eesi.biz.

Eurofins | mgt Sample Receipt



Environmental Laboratory Air Analysis Water Analysis Soil Contamination Analysis

NATA Accreditation Stack Emission Sampling & Analysis Trade Waste Sampling & Analysis Groundwater Sampling & Analysis



38 Years of Environmental Analysis & Experience

	Section Street	20		4	6	2	2	Nac: Hen E	2	4	r'		LABID	ALS'USE ONLY	OMMENTS/SPECI	nall Involce to : rou	nali Reports to : re pong@environm	C amailed to ALS	MPLER: ST	OJECT MANAGER	DER NUMBER:	OJECT: 210074 S	FICE: 98 MARIBY	IENT: ENVIRONM	
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Enquiries

From: Sent: To: Subject:	Regin Orquiza [rorquiza@eesicontracting.com] Wednesday, 26 June 2013 4:33 PM Enquiries; Adrian Tabacchiera RE: Eurofins mgt Sample Receipt Advice - Report 383844 : Site 210074 STH MELBOURNE GASWORKS
Hi James and Adrian,	
Could you please char	ige the BTEX and Trimethylebenzenes to MAH's.
Please confirm if you	have received my request.
Regards	
Regin	
Original Message From: enquiries.melb@ Sent: Tuesday, 25 Jur To: Regin Orquiza Subject: Eurofins m MELBOURNE GASWORKS	9 Ømgtlabmark.com.au [mailto:enquiries.melb@mgtlabmark.com.au] 1e 2013 7:12 PM ngt Sample Receipt Advice - Report 383844 : Site 210074 STH
Dear Client,	
Please find attached (COC). It is importa correct.	sample receipt advice, summary sheet and your chain of custody ant that you check these documents to ensure that the details are
If there are any irre as soon as possible t	egularities then please contact your Eurofins mgt client manager to make certain they get amended.
Your client manager	will be your point of contact for queries and test results.
Your client manager's	s contact details can be found on your SRA.
Kind Regards	
James Gould Eurofins mgt	
Ph:03 8564 5025 Email:enquiries@mgtla	abmark.com.au
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ATTACHMENT C3 SUMMARY OF RPD RESULTS

Table C3 Comment of Deleting Demonstrate Differences (DDD)				E1119.000.77	TA1906277	ŀ	C11000277	Interlah D	ŀ	0.07205101	EM41002700	CLA1 202 720	C dobotol	
		/	Field ID	GW43	DUP1 F	RPD	GW43	SPLIT	RPD	GW28	Dup 2 RP	D GW28	SPLIT 2	RPD
		0,	Sampled_Date-Time	24/06/2013 15:00	24/06/2013 15:00	2	4/06/2013 15:00	24/06/2013 15:00		5/06/2013 15:00	25/06/2013 15:00	25/06/2013 15:00	25/06/2013 15:	00
Method_Name	ChemName	Units	EQL											
EK055G: Ammonia as N by Discrete Analyser	Ammonia as N	1 l/gu	0	1330.0	1390.0	4	1330.0	350.0	117					
EG020F: Dissolved Metals by ICP-MS	Aluminium (Filtered)) /uu	0.01 (Primary): 0.05 (Interlah)	<0.01	<0.01	c	<0.01	<0.05	c	<0.01	<0.01	<0.01	<0.05	c
an a second	Arsenic (Filtered)		0.001	0.003	<0.001	100	0.003	0.003	0	0.314	0.308	0.314	0.24	27
	Boron (Fittered)	mg/l	0.05	0.99	1.08	6	0.99	1.2	19	0.81	0.86	0.81	0.8	-
	Cadmium (Filtered)	mg/l	0.0001 (Primary): 0.0002 (Interlab)	0.0007	0.0009	25	0.0007	0.0007	0	<0.0001	<0.0001 0	<0.0001	0.0002	67
	Cobalt (Filtered)	mg/l 0	001	90:0	0.064	9	0.06	0.051	16	<0.001	<0.001 0	<0.001	<0.001	0
	Copper (Fittered)	mg/l 0	001	0.006	0.022	114	0.006	0.014	80	<0.001	<0.001 0	<0.001	<0.001	0
	Iron (Filtered)	mg/l 0	0.05	0.26	0.24	80	0.26	0.35	30	2.2	2.12 4	2.2	2.3	4
	Lead (Filtered)	mg/l C	0.001	0.001	0.002	67	0.001	0.001	0	<0.001	<0.001 0	<0.001	<0.001	0
	Manganese (Filtered)	mg/l	0.001 (Primary): 0.005 (Interlab)	6.69	7.0	5	6.69	9.3	33	0.175	0.173 1	0.175	0.17	3
	Nickel (Filtered)	mg/l	0.001	0.062	0.072	15	0.062	0.058	7	0.018	0.017 6	0.018	0.016	12
	Selenium (Fittered)	mg/l (0.01 (Primary): 0.001 (Interlab)	<0.01	<0.01	0	<0.01	0.002	0	<0.01	<0.01 0	<0.01	0.004	0
	Zinc (Filtered)	mg/l	0.005 (Primary): 0.001 (Interlab)	0.048	0.11	78	0.048	0.086	57	0.005	<0.005 0	0.005	0.01	67
ED041G: Sulfate (Turbidimetric) as SO4 2- bv DA	Sulfate as S04 - Turbidimetric (Filtered)	ma/l		1200.0	1210.0	+	1200.0	400 (as S) X 3 = 1200 0	c					+
				0					,					
EK026SF: Total CN by Segmented Flow Analyser	Cyanide Total	mg/l (0.004 (Primary): 0.005 (Interlab)	<0.004	<0.004	0	<0.004	<0.005	0	0.016	0.018 11	0.016	0.038	81
														_
EP080/071: Total Petroleum Hydrocarbons	C10 - C14	hg/L 5	20	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0 0	<50.0	<50.0	0
	C15 - C28	hg/L 1	001	<100.0	<100.0	0	<100.0	<100.0	0	160.0	160.0 0	160.0	<100.0	46
	C29-C36	hg/L 5	50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0	<50.0	<80.0	<50.0	<100.0	0
	+C10 - C36 (Sum of total)	hg/L 5	50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0	160.0	160.0 0	160.0	<100.0	46
	010 010			4							•			4
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft	C10-C16	mg/l	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.1	<0.1	<0.05	0
	C16-C34	mg/l	11	<0.1	<0.1	0	<0.1	<0.1	0	0.17	0.24 3-	0.17	<0.1	22
	C34-C40	mg/l	0,1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	<0.1	<0.1	0
	C10 - C40 (Sum of total)	hg/L 1	100	<100.0	<100.0	-	<100.0		T	1 /0.0	240.0 34	1/0.0		+
E D 00/071: Total Date form thirdecondrose	Ce Co	101		0.002	0.062	<	0.00~	/30.0	<	0.002	0 000	0.002	0.062	<
	80-00	NG/L	2	0.022	0.022	>	0.035	0.025	>	0.025	0.022	0.025	0.022	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft	C6-C10	mg/l	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02 0	<0.02	<0.02	0
ED0744 - Monocyclic Aromatic Hydroca thone	1.2.4-trimethylhenzene	4		<5.0	< 5.0	0	<5.0		t	<5.0	<5.0 0	<5.0		
	13.5-trimethylbenzene			<5.0 <5.0	<5.0		<5.0		t	<5.0	<5.0	<5.0		╞
	Benzene	na/L 1		<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	<1.0	<1.0	0
	Ethylbenzene	hg/L 2	2 (Primary): 1 (Interlab)	<2.0	<2.0	0	<2.0	<1.0	0	<2.0	<2.0	<2.0	<1.0	0
	Isopropylbenzene	hg/L 5	5 (Primary): 1 (Interlab)	<5.0	<5.0	0	<5.0	<1.0	0	<5.0	<5.0 0	<5.0	<1.0	0
	n-butylbenzene	hg/L 5		<5.0	<5.0	0	<5.0			<5.0	<5.0 0	<5.0		
	n-propylbenzene	hg/L 5		<5.0	<5.0	0	<5.0			<5.0	<5.0 0	<5.0		
	p-isopropyltoluene	hg/L 5	-	<5.0	<5.0	0	<5.0		_	<5.0	<5.0 0	<5.0		
	sec-butylbenzene	hg/L 5	2	<5.0	<5.0	0	<5.0		_	<5.0	<5.0 0	<5.0		_
	Styrene	hg/L 5	5 (Primary): 1 (Interlab)	<5.0	<5.0	0	<5.0	<1.0	0	<5.0	<5.0 0	<5.0	<1.0	0
	tert-butylbenzene	hg/L 5	10	<5.0	<5.0	0	<5.0			<5.0	<5.0 0	<5.0		_
	Toluene	hg/L 2	2 (Primary): 1 (Interlab)	<2.0	<2.0	0	<2.0	<1.0	0	<2.0	<2.0 0	<2.0	<1.0	0
	Xylene (m & p)	hg/L 2	~	<2.0	<2.0	0	<2.0	<2.0	0	<2.0	<2.0 0	<2.0	<2.0	0
	Xylene (o)	hg/L 2	2 (Primary): 1 (Interlab)	<2.0	<2.0	0	<2.0	<1.0	0	<2.0	<2.0 0	<2:0	<1.0	0
ED074U- Naabbalaaa	Nachthalaca	1.01	/ (Ddmand): 30 / (ntadab)	0.27	027	<	0.2.7	017	<	027	0 02/	027	017	<
EPU/4H: Naprunarene	Naphtnalene	HG/L L	(Primary). zv (intertau)	-1.U	-1.U	5	-1''A	>1.0	2	-1.U	~	2.12	21.0	2

PRDs have only pear considered where a concentration is greater than 5 times the EQL "High PRDs are in bold (Acceptable RFDs for each EQL multiplier range are: 100 6-10 x 20 x EQL); 20 (> 20 x EQL).) "High PRDs are into a per compound brass say therefore any environment of the own header relate to those used in the primary laboratory." "Initial Duptication are interview of the performance and performance and the own header relate to those used in the primary laboratory."



ATTACHMENT C4 SUMMARY OF RINSATE AND EQUIPMENT BLANKS

Table C2 - Summary of Rinsate and Trip Blanks Results

	Field ID			Rinsate 1	Rinsate 2	RIN 3 F	RIN4	Trip 1	Trip 2	Trip 3	Trip 4	TRIP 5	Trip 6 T	rip 7 1	rip 8
chom Ground	Chomblemo	1 Inite	IC II	=M1306677	=M1306738	EM1306798 E	-M1306871	EM1306677	EM1306738	EM1306738	=M1306766	EM1306798	=M1306820 E	:M1306871 E	:M1306906
		ma/l			-				,	,					
	-C10 - C10 Flaction (30)	mg/l													
	-CT0 - C40 Flaction (Sulli) (SG)	mg/L													
	>C.0 - C37 - I.action (SC)	ma/L	.0												
	Sulfate as SO4 - Turbidimetric (Filtered)	- S			,	,	,		,	,	,	,	,	,	,
	C10 - C36 Fraction (sum) (SG)	mg/L	0.05		,	,	,	,	,	,	,	,	,	,	,
BTEX	Benzene	ng/L	. -	Ŷ	۲	Ý	۲ ۲	Ŷ	ý	۲	2	۲	ŕ	Ý	ŕ
	Ethylbenzene	hg/L	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Toluene	µg/L	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (m & p)	hg/L	2	2	2	2	<2	2	2	~2	^2	2	22	2	22
	Xylene (o)	hg/L	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene Total	ng/L	3	4	<4	4	<4	4>	<4	<4	<4	<4	4	4	4>
	C6-C10 less BTEX (F1)	mg/L	0.02					ı							
norganics	Ammonium Ion	mg/L	0.01	-											
	Alkalinity (total) as CaCO3	mg/L	-					-							
	Ammonia as N	µg/L	10	-	-	<10		-	-	-	-	-		-	
	Anions Total	meq/L	0.01					-			-			-	
	Cations Total	meq/L	0.01	,	,	,	,	ı	,	,	,	,	,	ı	,
	Chloride	mg/L	-	ı	,	,		ı			,			1	
	Cyanide Total	mg/L	0.004					ı							
	Fluoride	mg/L	0.1												
	Ionic Balance	%	0.01	ı	ı	1	ı	I	ı	ı	ı		ı	ı	ı
	Nitrate (as N)	mg/L	0.01												
	Nitrate	mg/L	0.01	,	,	,	,	ı	,	,	,	,	,	ı	,
	Nitrite (as N)	mg/L	0.01												
	pH (Lab)	pH Units	0.01												
	Reactive Phosphorus as P	mg/L	0.01					-							
	Sodium (Filtered)	mg/L	1	-	-			-	-	-	-	-		-	
	Sulphate as S	mg/L	5	-	-				-						
	TDS	mg/L	10												
ead	Lead (Filtered)	mg/L	0.001												
MAH	1,2,4-trimethylbenzene	hg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	1,3,5-trimethylbenzene	µg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	Isopropylbenzene	hg/L	-	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	n-butylbenzene	hg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	n-propylbenzene	hg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	p-isopropyltoluene	µg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	sec-butylbenzene	µg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	Styrene	µg/L		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	tert-butylbenzene	ug/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Metals	Aluminium (Filtered)	mg/L	0.01	,	'	,		ı		,	,			,	
	Arsenic (Filtered)	mg/L	0.001		,	,	,			,		,	,		
	Doloti (Filterau) Cadmium (Eilterad)	mg/l	10000												
	Cautilium (Filtered) Calcium (Filtered)	mg/l	1000.0	. ,											
	Calciuiri (Fiitereu)	mg/l	- 00 0												
	Conner (Filtered)	mg/L	0.00												
	Iron (Filtered)	ma/L	0.05												
	Magnesium (Filtered)	mg/L	.			,	,			,	,	,	,	,	
	Manganese (Filtered)	mg/L	0.001												
	Nickel (Filtered)	mg/L	0.001				ı		ī					ī	ı
	Potassium (Filtered)	mg/L	-												
	Selenium (Filtered)	mg/L	0.001	1		,		I	ī	1	1	,	1		I
	Zinc (Filtered)	mg/L	0.001												

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ng/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	hg/L	hg/L	ng/L	mg/L	hg/L	mg/L	hg/L	hg/L	hg/L	ng/L	ma/L
Naphthalene	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	TPH C10-C14 Fraction after Silica Cleanup	TPH C15-C28 Fraction after Silica Cleanup	TPH C29-C36 Fraction after Silica Cleanup	C10 - C14	C6 - C9	C15 - C28	TPH C15-C28 Fraction after Silica Cleanup	C29-C36	TPH C29-C36 Fraction after Silica Cleanup	+C10 - C36 (Sum of total)	C10 - C36 (Sum of total) SGC	C10 - C40 (Sum of total)	C10 - C40 (Sum of total) SGC	C6-C10
PAH/Phenols	ТРН																	



APPENDIX D

LABORATORY TRANSCRIPTS AND CHAIN OF CUSTODY FORMS

Les Au	5 Laboratory: ploase fick ÷	Phi 02 pd#1 etch 11 Newcodlar 5 R Phi 02 Point 6 Duri	E composition y becomposition de complete un	Vitwatered (CCC 2001) 11 10 Vitwatered (CCC 2001) 11 1 wearded) discrete crime, 1960	ACT3 7/26 E 1 ownerwille: 1-1- ATI96 01/01	complex femilianes (climate 15 Decision (21 Decision) 5 construction (construction) 5 construction (construction)	oper çona 9.411 (t	Paratetration 11 Adelaidet 34. en d'MAR	ALL CONTRACT	an tari	A State		11 10 11	1112	L'unit	the flucture in 22 Luces double for an	references and a term	Point and
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S MARIBYRN	ONG RD, FOOTSCRAY, VIC. 3011	20	n - Ultra Tra	ico Organics)				COD SEQ.	JENCE N	NUMBER	Free	a / frozan k	a brida p	DOL NUT		ALC: NO	and	AN ANA
CT: 210074 Sth	Melbourno Gasworks		ALS QUO	re No.: ME/330/13					(Cincle)		(ecol	10 D	The second	A A A A A A A A A A A A A A A A A A A		はある		No. of the
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ER: SFL	1162	SAM	PLER MO	BILE: .	RELINGU	ISHED BY:		RECEIVED	BY:	K	A /	SHEUGT	1			1	3	EFL
nailed to ALS? (YES / NO)	EOD	FORMAT	(or dofault):		平		CO.1	5		Z		ζ					9
aports to : rord	uiza@environmentalearthscie talearthsciences.com	nces.com and			DATE/TIM	E. C.		DATE/TIME	1	8	TETIM	-	:21	201	EN C	SIG	3	0
wolce to : rorqu	iza@onvironmontaloorthsciences.	com			0	2		0/22	5		2	1	Ya	•				
ENTS/SPECIAL	HANDLING/STORAGE OR DISPOS	AL:											3-			2		5
ISE ONLY	SAMPLE DETA MATRIX: Solid(S) M	ALLS Veter(W)		CONTAINER INFORM	ATION	ANALYSIS R	EQUIRED In	cluding SUI of Total (with	TES (MD	Stato Co	dos musi	to foot the	Bict sum	5 (prico)	0	Addition	el Inform	tion
	SAMPLEID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Sective P, Ammonia Suite - includes Suite - includes Sective P, Ammonia Seactive P, Ammonia	ield temp multi (field PH and recorded on the COC)	Dissolved metals - AI, As, Cd, Cu, Fe, Pb, NI, Zn, Co, Se, B & Mn	sbinsyO letoT	HAM - AAT093 9n9l6rbrigeV - HAT093	TPH (C6-C36) plus TRH	SV TPH - on - on - on		And HISK OUISMANA	Time thy barren	Нд Ызй	qmət bləif	
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Enquiries

From: Sent: To: Subject:	Regin Orquiza [rorquiza@eesicontracting.com] Wednesday, 26 June 2013 4:33 PM Enquiries; Adrian Tabacchiera RE: Eurofins mgt Sample Receipt Advice - Report 383844 : Site 210074 STH MELBOURNE GASWORKS
Hi James and Adrian,	
Could you please char	ige the BTEX and Trimethylebenzenes to MAH's.
Please confirm if you	have received my request.
Regards	
Regin	
Original Message From: enquiries.melb@ Sent: Tuesday, 25 Jur To: Regin Orquiza Subject: Eurofins m MELBOURNE GASWORKS	9 Ømgtlabmark.com.au [mailto:enquiries.melb@mgtlabmark.com.au] 1e 2013 7:12 PM ngt Sample Receipt Advice - Report 383844 : Site 210074 STH
Dear Client,	
Please find attached (COC). It is importa correct.	sample receipt advice, summary sheet and your chain of custody ant that you check these documents to ensure that the details are
If there are any irre as soon as possible t	egularities then please contact your Eurofins mgt client manager to make certain they get amended.
Your client manager	will be your point of contact for queries and test results.
Your client manager's	s contact details can be found on your SRA.
Kind Regards	
James Gould Eurofins mgt	
Ph:03 8564 5025 Email:enquiries@mgtla	abmark.com.au
This message has beer	ı scanned for malware by Websense. www.websense.com


En ironment E rt Sciences e e rib rnon Street Footscr



ertificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 1254

Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

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lient Reference Received ate 210074 STH MELBOURNE GASWORKS Jun 2 , 2013

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ient S m e			SТ
Sm e tri			ter
Euroins m tS m e o			n
teSm e			un
Test Reference	LOR	Unit	
Tot eco er b e roc rbons E Fr ct	ions		
TRH 6-	0.02	mg L	0.02
TRH 10- 14	0.0	mg L	0.0
TRH 1 - 28	0.1	mg L	0.1
TRH 2 - 36	0.1	mg L	0.1
TRH 10-36 Total	0.1	mg L	0.1
onoc c ic rom tic roc rbons			
Benzene	0.001	mg L	0.001
Ethylbenzene	0.001	mg L	0.001
sopropyl benzene umene	0.001	mg L	0.001
m p- ylenes	0.002	mg L	0.002
o- ylene	0.001	mg L	0.001
Styrene	0.001	mg L	0.001
Toluene	0.001	mg L	0.001
ylenes - Total	0.003	mg L	0.003
luorobenzene surr.	1		64
Tot eco er b e roc rbons E Fr ct	ions	r	
Naphthalene ^{N02}	0.02	mg L	0.02
TRH 6- 10	0.02	mg L	0.02
TRH 6- 10 less BTE 1 N04	0.02	mg L	0.02
TRH 10- 16	0.0	mg L	0.0
TRH 10- 16 less Naphthalene 2 N01	0.0	mg L	0.0
TRH 16- 34	0.1	mg L	0.1
TRH 34- 40	0.1	mg L	0.1
occic rom tic rocrbons			
Naphthalene	0.001	mg L	0.001
	1		
Ammonia as N	0.01	mg L	0.3
yanide total	0.00	mg L	0.00
Sulphate as S		mg L	400
e et s	1		
Aluminium filtered	0.0	mg L	0.0
Arsenic filtered	0.001	mg L	0.003
Boron filtered	0.0	mg L	1.2
admium filtered	0.0002	mg L	0.0007
obalt filtered	0.001	mg L	0.0 1
appar filtered	0.001	mal	0.014



ient Sam e Sam e atri uro in m t Sam e No ate Sam ed			S T ater 1 n1 1 6 un 24 2 1
Test/ eference	0	nit	
ea eta			
Iron filtered	0.05	m /	0.5
ead filtered	0.001	m /	0.001
an anese filtered	0.005	m /	
ic el filtered	0.001	m /	0.05
Selenium filtered	0.001	m /	0.002
inc filtered	0.001	m /	0.0



Sam e i tor

here samples are submitted/anal sed o er se eral da s, the last date of e traction and anal sis is reported. A recent re iew of our I S has resulted in the correction or clarification of some method identifications. ue to this, some of the method reference information on reports has chan ed. owe er, no substanti e chan e has been made to our laborator methods, and as such there is no chan e in the alidit of current or pre ious results re ardin both ualit and ATA accreditation.

e cri tion	Te tin Site	tracted	o din Time
Total eco erable drocarbons 1 E ractions	elbourne	un 2 , 201	7 a
ethod T C C T 100A			
Total eco erable drocarbons 201 E ractions	elbourne	un 2 , 201	7 a
ethod T O 2010			
onoc clic Aromatic drocarbons	elbourne	un 2 , 201	7 a
ethod SE A 2 0 T 50A onoc clic Aromatic drocarbons			
ol c clic Aromatic drocarbons	elbourne	un 2 , 201	7 a
ethod SE A 270 ol c clic Aromatic drocarbons			
Ammonia as	elbourne	un 25, 201	2 a
ethod A A 500 Ammonia itro en b IA			
C anide total	elbourne	un 2 , 201	1 a
ethod SE A 010 C anide			
Sulphate as S	elbourne	un 2 , 201	2 a
ethod A A 500 SO b iscrete Anal ser			
ea etals filtered	elbourne	un 25, 201	10 a
ethod SE A 020 ea etals			



uro in m t nterna ua it ontro e ie and o ar

enera

1. aborator C results for ethod lan s, uplicates, atri Spi es, and aborator Control Samples are included in this C report where applicable. Additional C data ma be a ailable on re uest.

- 2. All soil results are reported on a dr basis, unless otherwise stated.
- . Actual s are matri dependant. uoted s ma be raised where sample e tracts are diluted due to interferences.
- . esults are uncorrected for matri spi es or surro ate reco eries.
- 5. S OC anal sis on waters are performed on homo enised, unfiltered samples, unless noted otherwise.
- . Samples were anal sed on an as recei ed basis. 7. This report replaces an interim results pre iousl issued.

o din Time

lease refer to Sample reser ation and Container uide for holdin times S 001.

or samples recei ed on the last da of holdin time, notification of testin re uirements should ha e been recei ed at least hours prior to sample receipt deadlines as stated on the Sample eceipt Ac nowled ment.

If the aborator did not recei e the information in the re uired timeframe, and re ardless of an other inte rit issues, suitabl ualified results ma still be reported.

oldin times appl from the date of samplin , therefore compliance to these ma be outside the laborator s control.

N T p duplicates are reported as a ran e OT as

N TS

m	milli rams per ilo ram	m	milli rams per litre
u	micro rams per litre	m	arts per million
	b arts per billion		ercenta e
or	1 m Or anisms per 100 millilitres	NT	nits
	N 1 m ost robable umber of or anisms per 100 millilitres		

T S	
r	here a moisture has been determined on a solid sample the result is e pressed on a dr basis.
	imit of eportin .
S	Addition of the anal te to the sample and reported as percenta e reco er .
	elati e ercent ifference between two uplicate pieces of anal sis.
S	aborator Control Sample reported as percent reco er
	Certified eference aterial reported as percent reco er
et od an	In the case of solid samples these are performed on laborator certified clean sands.
	In the case of water samples these are performed on de ionised water.
Surr Surro ate	The addition of a li e compound to the anal te tar et and reported as percenta e reco er .
u icate	A second piece of anal sis from the same sample and reported in the same units as the result to show comparison.
atc u icate	A second piece of anal sis from a sample outside of the clients batch of samples but run within the laborator batch of anal sis.
atc S	Spi e reco er reported on a sample from outside of the clients batch of samples but run within the laborator batch of anal sis.
S A	nited States En ironment rotection Authorit
A A	American ublic ealth Association
AS	Australian Standard eachin rocedure AS .
т	To icit Characteristic eachin rocedure
	Chain of Custod
SA	Sample eceipt Ad ice
	Client arent C was performed on samples pertainin to this report
N	on Client arent C performed on samples not pertainin to this report, C is representati e of the se uence or batch that client samples were anal

A TAN T A

uplicates lobal uplicates Acceptance Criteria is 0 howe er the followin acceptance uidelines are e uall applicable

esults 10 times the O o imit

esults between 10 20 times the O must lie between 0 50

esults 20 times the O must lie between 0 0

Surro ate eco eries eco eries must lie between 50 150 henols 20 1 0 .

ATA N A NTS

1. here a result is reported as a less than , hi her than the nominated O, this is due to either matri interference, e tract dilution re uired due to interferences or contaminant le els within the sample, hi h moisture content or insufficient sample pro ided.

- 2. uplicate data shown within this report that states the word ATC is a atch uplicate from outside of our sample batch, but within the laborator sample batch at a 1 10 ratio. The arent and uplicate data shown is not data from our samples.
- . Or anochlorine esticide anal sis where reportin CS data, To ophene Chlordane are not added to the CS.
- . Or anochlorine esticide anal sis where reportin Spi e data, To ophene is not added to the Spi e.
- 5. Total eco erable drocarbons where reportin Spi e CS data, a sin le spi e of commercial drocarbon products in the ran e of C12 C 0 is added and it s Total eco er is reported in the C10 C1 cell of the eport.
- . p and ree Chlorine anal sed in the laborator Anal sis on this test must be in within 0 minutes of samplin .Therefore laborator anal sis is unli el to be completed within holdin time. Anal sis will be in as soon as possible after sample receipt.
- 7. eco er ata Spi es Surro ates where chromato raphic interference does not allow the determination of eco er the term I T appears a ainst that anal te.
- . ol chlorinated iphen Is are spi ed onl usin Arochlor 12 0 in atri Spi es and CS s.
- . or atri Spi es and CS results a dash in the report means that the specific anal te was not added to the C sample.
- 10. uplicate s are calculated from raw anal tical data thus it is possible to ha e two sets of data.

sed within



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et od an		- · · · ·				
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T C10 C1	m /	0.02		0.02	ass	
T C15 C2	m /	0.1		0.1	ass	
T C2 C	m /	0.1		0.1	ass	
et od an						
onoc c ic Aromatic drocarbon S A 26 T 5 A	1					
	m /	0.001		0.001	266	
Eth liben ene	m /	0.001		0.001	255	
Isopron I ben ene Cumene	m /	0.001		0.001	ass	
m p ehes	m /	0.002		0.002	ass	
o lene	m /	0.001		0.001	ass	
St rene	m /	0.001		0.001	ass	
Toluene	m /	0.001		0.001	ass	
enes Total	m /	0.00		0.00	ass	
et od an						
Tota eco erab e drocarbon 2 1 N raction	т					
aphthalene	m /	0.02		0.02	ass	
T C C10	m /	0.02		0.02	ass	
T C10 C1	m /	0.05		0.05	ass	
T C1 C	m /	0.1		0.1	ass	
ТССО	m /	0.1		0.1	ass	
et od an						
o c c ic Aromatic drocarbon S A 2 o c c ic A	romatic					
aphthalene	m /	0.001		0.001	ass	
et od an		0.001	I	01001		
Ammonia as	m /	0.01		0.01	ass	
C anide total	m /	0.005		0.005	ass	
Sulphate as S	m /	5		5	ass	
et od an						
ea eta itered SA62 ea eta						
Aluminium filtered	m /	0.05		0.05	ass	
Arsenic filtered	m /	0.001		0.001	ass	
oron tiltered	m /	0.05		0.05	ass	
Cabalt filtered	m /	0.0002		0.0002	ass	
Copper filtered	m /	0.001		0.001	365	
Iron filtered	m /	0.001		0.001	200	
ead filtered	m /	0.001		0.001	ass	
ic el filtered	m /	0.001		0.001	ass	
Selenium filtered	m /	0.001		0.001	ass	
inc filtered	m /	0.001		0.001	ass	
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T C10 C1		100		70 1 0	ass	
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onoc c ic Aromatic drocarbon S A 26 T 5 A onoc c ic Aromatic drocarbon	\					



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enes Total				101		70 1 0	ass	
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T C C10						70 1 0	ass	
T C10 C1				101		7010	200	
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o c c ic Aromatic drocarbon	S A 2 0	c cicA	romatic					
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0 000 01								
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	oa ota			[
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Arsenic filtered				10		0 120	200	
oron filtered				5		0 120	200	
Cadmium filtered				100		0 120	200	
				7		0 120	200	
Copper filtered			10		0 120	200		
Iron filtered				10		0 120	d55	
				5		0 120	d55	
an anese filtered			11		0 120	200		
ic el filtered					0 120	200		
Selenium filtered					0 120	d55		
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onoc c ic Aromatic drocarbon	4	0				70.4.0		
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ni p enes	1 01 151			11			ass	
	1 11 151	C		117		7010	ass	
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	<u>1 n1/</u>	C		1		7010	ass	
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oron filtered	1 n1 1	С		77			75 125	ass	
Cadmium filtered	1 n1 1	С					75 125	ass	
Cobalt filtered	1 n1 1	С		0			75 125	ass	
Copper filtered	1 n1 1	С					75 125	ass	
Iron filtered	1 n172 1	С		7			75 125	ass	
ead filtered	1 n1 1	С					75 125	ass	
ic el filtered	1 n1 1	С					75 125	ass	
Selenium filtered	1 n1 1	С		0			75 125	ass	
inc filtered	1 n1 1	С		7			75 125	ass	
Te t	ab Sam e	A Source	nit	eut1			Acce tance imit	a imit	uaiin ode
u icate				1					
Tota eco erab e drocarbon	1 N ract	ion		esult 1	esult 2				
тсс	1 n1 150	С	m /	0.02	0.02	1	0	ass	
u icate				i			1		
onoc c ic Aromatic drocarbor	1			esult 1	esult 2				
en ene	1 n1 150	С	m /	0.001	0.001	1	0	ass	
Eth Iben ene	1 n1 150	С	m /	0.001	0.001	1	0	ass	
Isoprop I ben ene Cumene	1 n1 150	С	m /	0.001	0.001	1	0	ass	
m p ehes	1 n1 150	С	m /	0.002	0.002	1	0	ass	
o lene	1 n1 150	С	m /	0.001	0.001	1	0	ass	
St rene	1 n1 150	С	m /	0.001	0.001	1	0	ass	
Toluene	1 n1 150	С	m /	0.001	0.001	1	0	ass	
enes Total	1 n1 150	С	m /	0.00	0.00	1	0	ass	
u icate				1			1 1		
Tota eco erab e drocarbon	2 1 N ract	ion		esult 1	esult 2				
aphthalene	1 n1 150	С	m /	0.02	0.02	1	0	ass	
T C C10	1 n1 150	С	m /	0.02	0.02	1	0	ass	
u icate				1					
	1			esult 1	esult 2				
Ammonia as	A1 n1 5	С	m /	0.01	0.01	1	0	ass	
C anide total	1 n17	С	m /	0.005	0.005	1	0	ass	
Sulphate as S	1 n1	С	m /	5	5	1	0	ass	
u icate				1	1				
ea eta i tered	1			esult 1	esult 2				
Aluminium filtered	1 n1 1	C	m /	0.1	0.1	20	0	ass	
Arsenic filtered	1 n1 1	C	m /	0.001	0.0012	.7	0	ass	
oron filtered	1 n1 1	C	m /	0.05	0.052	2.	0	ass	
Cadmium filtered	1 n1 1	С	m /	0.0002	0.0002	1	0	ass	
Cobalt filtered	1 n1 1	C	m /	0.001	0.001	1	0	ass	
Copper filtered	1 n1 1	С	m /	0.001	0.001	1	0	ass	
Iron filtered	1 n172 1	С	m /	0.05	0.05	1	0	ass	
ead filtered	1 n1 1	С	m /	0.001	0.001	1	0	ass	
ic el filtered	1 n1 1	С	m /	0.001	0.001	1	0	ass	
Selenium filtered	1 n1 1	С	m /	0.001	0.001	1	0	ass	
inc filtered	1 n1 1	С	m /	0.00	0.007	1	0	ass	



omment

Custod Seals Intact if used /A
Attempt to Chill was e ident es
Sample correctl preser ed es
Or anic samples had Teflon liners es
Sample containers for olatile anal sis recei ed with minimal headspace es
Samples recei ed within oldin Time es
Some samples ha e been subcontracted o

ua i ier ode omment

ode e cri tion

 2 is determined b arithmeticall subtractin the naphthalene alue from the C10 C1 alue. The naphthalene alue used in this calculation is obtained from olatiles

 01
 b e Trap anal sis.

 here we ha e reported both olatile T C S and semi olatile C S naphthalene data, results ma not be identical. ro ided correct sample handlin protocols ha e been followed, an obser ed differences in results are li el to be due to procedural differences within each methodolo . esults determined b both techni use ha e passed

 02
 all A C acceptance criteria, and are entirel technicall alid.

all A C acceptance criteria, and are entried technical alid.
 1 is determined b arithmeticall subtractin the Total TE alue from the C C10 alue. The Total TE alue is obtained b summin the concentrations of TE anal tes. The C C10 alue is obtained b uantitatin a ainst a standard of mi ed aromatic/aliphatic anal tes.

Aut ori ed

Adrian	Tabacchiera	Client Ser ices
Carroll	ee	Senior Anal st olatile IC
Emil	osenber	Senior Anal st etal IC
uon	e	Senior Anal st Inor anic IC
Stace	en ins	Senior Anal st Or anic IC

enn ac on

aborator ana er

Final report - this Report replaces any previously issued Report

Indicates ot e uested

Indicates ATA accreditation does not co er the performance of this ser ice

ncertaint data is a ailable on re uest

Eurofins m t shall not be liable for loss, cost, dama es or e penses incurred b the client, or an other person or company, nesultin from the use of an information or interpretation i en in this report. In no case shall Eurofins m t be liable for coses use until adama es includin, but not limited to, lost profits, dama es for dualines and lost production arism. This document shall not be reproduced e cepin full and relates on 1 othe instested. In discuss, the tests were thereas, the tests were and the shall be formed on the shall be formed on the shall be reproduced execting the cepin full and relates on 1 other instested.

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CI BIO	SAUFLE ID	DATE I TINE	RATRIX	TYPE & PRESERVATIVI (refer to codes behavi)	E TOTAL	C BALANCE SUITE Ca, Mg, Na, K, Ci, Si cilva P, Ammonia	olañ briz Hq blañ) m DOD adl no babroca	melals - Al, As, Ca , Se, B & Mn	abin	Vaphthalene only	0-90) HST zuiq (86:	T V2 no - qu neelo C36) Ant TRH(C10-				Telephone	÷:+61.3.8	249
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** VOA VIAI ISCI Press ** VOA VIAI ISCI Press * Ziaz Aceditta Presso	cal: P = Unpresente Plates: H = Natz Presen eves. VB = VOA VII: Sodom Bluiphile Presen net Bodie, E = EDTA Presened Batter; ST = S	te Partic Offic - A vec'V5 - VOA Val berie Bude, ASS -	Galderic Preserve District Press Praetis Bag 1	NG CATC, GAN = SECOND TYONG Renad; AV = Airfreight Unprese M Auld Surgerate Soft: B = U.S.	metVel 5G - personed lag	dr. 5 = Sodura II) Sulfado Preserved	Amber Glat	H-HCIP	rened Pl	ING. HS	wpresenter, HCI preve	Arr-Autom	botie; 5P = 5ult	is Permet	S Planks: F	- Famaidehyde Prese		
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Raymond Thai

From: Carol Walsh Sent: Wednesday, 26 June 2013 9:16 AM Samples Melbourne To: REVISED COC - EM1306738-ENVIROMENTAL EARTH SCIENCES Subject: img-626090130.pdf Attachments: Importance: High ATTACHED REVISED COC. Please send the SPLIT 2 sample to MGT as per COC. Ş------Original Message-----From: Regin Orquiza [mailto:rorquiza@eesicontracting.com] Sent: Wednesday, 26 June 2013 9:14 AM To: Carol Walsh Subject: RE: ISSUES - EM1306738-ENVIROMENTAL EARTH SCIENCES Hi Carol, Please find the attached updated CoC showing the dup/split 2 required analytes. Please send the Split 2 sample to MGT. Regards Regin Regin Orquiza - Senior Environmental Engineer PO Box 2253, Footscray, Victoria 3011 p: 03 9687 1666 d: 03 8398 4403 m: 0448 888 593 f: 03 9687 1844 rorquiza@environmentalearthsciences.com www.environmentalearthsciences.com

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P Please consider the environment before printing this e-mail

-----Original Message-----From: Carol Walsh [mailto:Carol.Walsh@alsglobal.com] Sent: Wednesday, 26 June 2013 8:50 AM To: Regin Orquiza Subject: ISSUES - EM1306738-ENVIROMENTAL EARTH SCIENCES Regin For this attached work order, EM1306738, we have received two extra sample - DUP 2 & SPLIT 2 .

Please advise if any analysis is required on these samples, or should SPLIT 2 be sent off to another lab.

Refi

Kind Regards

Carol Walsh Senior Client Services Officer ALS | Environmental Division 4 Westall Rd Springvale, VIC. 3171 Australia

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Certificate of Anal sis NATA Accredited Accreditation Number 1261 Site Number 1254

Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention

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e ort Client eference ecei ed ate

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uro in m t Sam e No			1 n1 2
ate Sam ed			un 25 2 1
Test/ eference	0	nit	
Tota eco erab e drocarbon 1 N raci	ion		
ТСС	0.02	m /	0.02
T C10 C1	0.05	m /	0.05
T C15 C2	0.1	m /	0.1
T C2 C	0.1	m /	0.1
T C10 Total	0.1	m /	0.1
onoc c ic Aromatic drocarbon			
en ene	0.001	m /	0.001
Eth Iben ene	0.001	m /	0.001
Isoprop I ben ene Cumene	0.001	m /	0.001
m p ehes	0.002	m /	0.002
o lene	0.001	m /	0.001
St rene	0.001	m /	0.001
Toluene	0.001	m /	0.001
enes Total	0.00	m /	0.00
luoroben ene surr.	1		5
Tota eco erab e drocarbon 2 1 N ract	ion		
aphthalene ⁰²	0.02	m /	0.02
T C C10	0.02	m /	0.02
T C C10 less TE 1 °	0.02	m /	0.02
T C10 C1	0.05	m /	0.05
T C10 C1 less aphthalene 2 ⁰¹	0.05	m /	0.05
T C1 C	0.1	m /	0.1
T C C O	0.1	m /	0.1
o c c ic Aromatic drocarbon			
aphthalene	0.001	m /	0.001
	1	1	
C anide total	0.005	m /	0.0
ea eta	1		
Aluminium filtered	0.05	m /	0.05
Arsenic filtered	0.001	m /	0.2
oron filtered	0.05	m /	0.0
Cadmium filtered	0.0002	/	0.0002
Cobalt filtered	0.001	m /	0.001
Copper filtered	0.001	m /	0.001
	0.05	/	2.
ead filtered	0.001	m /	0.001



ient Same Same atri uro in mt Same No ate Samed			S T 2 ater 1 n1 2 un 25 2 1
Test/ eference	0	nit	
ea eta			
an anese filtered	0.005	m /	0.17
ic el filtered	0.001	m /	0.01
Selenium filtered	0.001	m /	0.00
inc filtered	0.001	m /	0.010



Sam e i tor

here samples are submitted/anal sed o er se eral da s, the last date of e traction and anal sis is reported. A recent re iew of our 1 S has resulted in the correction or clarification of some method identifications. ue to this, some of the method reference information on reports has chan ed. owe er, no substanti e chan e has been made to our laborator methods, and as such there is no chan e in the alidit of current or pre ious results re ardin both ualit and ATA accreditation.

e cri tion	Te tin Site	tracted	o din Time
Total eco erable drocarbons 1 E ractions	elbourne	un 2 , 201	7 a
ethod T C C T 100A			
Total eco erable drocarbons 201 E ractions	elbourne	un 2 , 201	7 a
ethod T O 2010			
onoc clic Aromatic drocarbons	elbourne	un 2 , 201	7 a
ethod SE A 2 0 T 50A onoc clic Aromatic drocarbons			
ol c clic Aromatic drocarbons	elbourne	un 2 , 201	7 a
ethod SE A 270 ol c clic Aromatic drocarbons			
C anide total	elbourne	un 27, 201	1 a
ethod SE A 010 C anide			
ea etals filtered	elbourne	un 2 , 201	10 a
ethod SE A 020 ea etals			



uro in m t nterna ua it ontro e ie and o ar

enera

1. aborator C results for ethod lan s, uplicates, atri Spi es, and aborator Control Samples are included in this C report where applicable. Additional C data ma be a ailable on re uest.

- 2. All soil results are reported on a dr basis, unless otherwise stated.
- . Actual s are matri dependant. uoted s ma be raised where sample e tracts are diluted due to interferences.
- . esults are uncorrected for matri spi es or surro ate reco eries.
- 5. S OC anal sis on waters are performed on homo enised, unfiltered samples, unless noted otherwise.
- . Samples were anal sed on an as recei ed basis. 7. This report replaces an interim results pre iousl issued.

o din Time

lease refer to Sample reser ation and Container uide for holdin times S 001.

or samples recei ed on the last da of holdin time, notification of testin re uirements should ha e been recei ed at least hours prior to sample receipt deadlines as stated on the Sample eceipt Ac nowled ment.

If the aborator did not recei e the information in the re uired timeframe, and re ardless of an other inte rit issues, suitabl ualified results ma still be reported.

oldin times appl from the date of samplin , therefore compliance to these ma be outside the laborator s control.

N T p duplicates are reported as a ran e OT as

N TS

m	milli rams per ilo ram	m	milli rams per litre
u	micro rams per litre	m	arts per million
	b arts per billion		ercenta e
or	1 m Or anisms per 100 millilitres	NT	nits
	N 1 m ost robable umber of or anisms per 100 millilitres		

T S	
r	here a moisture has been determined on a solid sample the result is e pressed on a dr basis.
	imit of eportin.
S	Addition of the anal te to the sample and reported as percenta e reco er .
	elati e ercent ifference between two uplicate pieces of anal sis.
S	aborator Control Sample reported as percent reco er
	Certified eference aterial reported as percent reco er
et od an	In the case of solid samples these are performed on laborator certified clean sands.
	In the case of water samples these are performed on de ionised water.
Surr Surro ate	The addition of a li e compound to the anal te tar et and reported as percenta e reco er .
u icate	A second piece of anal sis from the same sample and reported in the same units as the result to show comparison.
atc u icate	A second piece of anal sis from a sample outside of the clients batch of samples but run within the laborator batch of anal sis.
atc S	Spi e reco er reported on a sample from outside of the clients batch of samples but run within the laborator batch of anal sis.
S A	nited States En ironment rotection Authorit
A A	American ublic ealth Association
AS	Australian Standard eachin rocedure AS .
т	To icit Characteristic eachin rocedure
	Chain of Custod
S A	Sample eccipt Ad ice
	Client arent C was performed on samples pertainin to this report
N	on Client arent C performed on samples not pertainin to this report, C is representati e of the se uence or batch that client samples were anal sed within

A TAN T A

uplicates lobal uplicates Acceptance Criteria is 0 howe er the followin acceptance uidelines are e uall applicable

esults 10 times the O o imit

esults between 10 20 times the O must lie between 0 50

esults 20 times the O must lie between 0 0

Surro ate eco eries eco eries must lie between 50 150 henols 20 1 0 .

ATA N A NTS

1. here a result is reported as a less than , hi her than the nominated O, this is due to either matri interference, e tract dilution re uired due to interferences or contaminant le els within the sample, hi h moisture content or insufficient sample pro ided.

- 2. uplicate data shown within this report that states the word ATC is a atch uplicate from outside of our sample batch, but within the laborator sample batch at a 1 10 ratio. The arent and uplicate data shown is not data from our samples.
- . Or anochlorine esticide anal sis where reportin CS data, To ophene Chlordane are not added to the CS.
- . Or anochlorine esticide anal sis where reportin Spi e data, To ophene is not added to the Spi e.
- 5. Total eco erable drocarbons where reportin Spi e CS data, a sin le spi e of commercial drocarbon products in the ran e of C12 C 0 is added and it s Total eco er is reported in the C10 C1 cell of the eport.
- . p and ree Chlorine anal sed in the laborator Anal sis on this test must be in within 0 minutes of samplin . Therefore laborator anal sis is unli el to be completed within holdin time. Anal sis will be in as soon as possible after sample receipt.
- 7. eco er ata Spi es Surro ates where chromato raphic interference does not allow the determination of eco er the term I T appears a ainst that anal te.
- . ol chlorinated iphen Is are spi ed onl usin Arochlor 12 0 in atri Spi es and CS s.
- . or atri Spi es and CS results a dash in the report means that the specific anal te was not added to the C sample.
- 10. uplicate s are calculated from raw anal tical data thus it is possible to ha e two sets of data.



Te t	nit	eut1		Acce tance imit	a imit	uaiin ode
et od an		r	1	1		
Tota eco erab e drocarbon 1 N raction T	66					
T C10 C1	m /	0.05		0.05	ass	
T C15 C2	m /	0.1		0.1	ass	
T C2 C	m /	0.1		0.1	ass	
et od an						
onoc c ic Aromatic drocarbon S A 26 T 5 A onoc c ic Aromatic drocarbon	A					
en ene	m /	0.001		0.001	ass	
Eth Iben ene	m /	0.001		0.001	ass	
Isoprop I ben ene Cumene	m /	0.001		0.001	ass	
m p ehes	m /	0.002		0.002	ass	
o lene	m /	0.001		0.001	ass	
St rene	m /	0.001		0.001	ass	
Toluene	m /	0.001		0.001	ass	
enes Total	m /	0.00		0.00	ass	ļ
et od an		[1		
Tota eco erab e drocarbon 2 1 N raction 2 1	Т					
aphthalene	m /	0.02		0.02	ass	
T C10 C1	m /	0.05		0.05	ass	
T C1 C	m /	0.1		0.1	ass	
T C C O	m /	0.1		0.1	ass	
et od an						
o c c ic Aromatic drocarbon S A 2 o c c ic A drocarbon	romatic					
aphthalene	m /	0.001		0.001	ass	
et od an		[
C anida total	m /	0.005		0.005		
ot od on	111 /	0.005		0.005	d55	
et ou an		[
Aluminium filtered	m /	0.05		0.05	ass	
Arsenic filtered	m /	0.001		0.001	ass	
oron filtered	m /	0.05		0.05	ass	
Cadmium filtered	m /	0.0002		0.0002	ass	
Cobalt filtered	m /	0.001		0.001	ass	
Copper filtered	m /	0.001		0.001	ass	
Iron filtered	m /	0.05		0.05	ass	
ead filtered	m /	0.001		0.001	ass	
an anese filtered	m /	0.005		0.005	ass	
ic el filtered	m /	0.001		0.001	ass	
Selenium filtered	m /	0.001		0.001	ass	
inc filtered	m /	0.001		0.001	ass	
S eco er						
Tota eco erab e drocarbon 1 N raction T T 1 A	6 6					
тсс		102		70 1 0	ass	
T C10 C1		1		70 1 0	ass	
S eco er						
onoc c ic Aromatic drocarbon S A 26 T 5 A onoc c ic Aromatic drocarbon	\					
en ene				70 1 0	ass	
Eth Iben ene		10		70 1 0	ass	
m p ehes		111		7010	ass	1



Te t			nit	eut1		Acce tance imit	a imit	uaiin ode
Toluene				102		70 1 0	ass	
enes Total				10		70 1 0	ass	
S eco er								
Tota eco erab e drocarbon 2 1	2 1 N ra	ction	Т					
T C C10				102		70 1 0	ass	
T C10 C1				2		70 1 0	ass	
S eco er								
o c c ic Aromatic drocarbon drocarbon	S A 2	o ccicA	romatic					
aphthalene				72		70 1 0	ass	
S eco er			•	•				
C anide total						70 1 0	ass	
S eco er								
ea eta itered SA62	ea eta							
Aluminium filtered				117		0 120	ass	
Arsenic filtered				10		0 120	ass	
oron filtered				105		0 120	ass	
Cadmium filtered				111		0 120	ass	
Cobalt filtered				115		0 120	ass	
Copper filtered				107		0 120	ass	
ead filtered				112		0 120	ass	
an anese filtered				11		0 120	ass	
ic el filtered				110		0 120	ass	
Selenium filtered				112		0 120	ass	
inc filtered				10		0 120	ass	
Te t	ab Sam e	A Source	nit	eut1		Acce tance imit	a imit	uaiin ode
Sie ecoer				1				
Tota eco erab e drocarbon	1 N ra	ction		esult 1				
тсс	1 n1 00	С		111		70 1 0	ass	
T C10 C1	1 n1 27	С		7		70 1 0	ass	
Sie ecoer				1	I I	1		
onoc c ic Aromatic drocarbor	<u>ן</u>			esult 1				
en ene	1 n1 00	С		100		70 1 0	ass	
Eth Iben ene	1 n1 00	С		110		70 1 0	ass	
m p ehes	1 n1 00	С		117		70 1 0	ass	
o lene	1 n1 00	С		10		70 1 0	ass	
Toluene	1 n1 00	С		115		70 1 0	ass	
enes Total	1 n1 00	C		11		70 1 0	ass	
Sie ecoer				1	I I			
Tota eco erab e drocarbon	2 1 N ra	ction		esult 1				
T C C10	1 n1 00	C		111		70 1 0	ass	
T C10 C1	1 n1 27	C		0		70 1 0	ass	
Sie ecoer				001144				
C anida total	1 - 1 - 2	0				70.1.0		
			l	11		1 7010	888	
				Coult 1				
Aluminium filtered	1 n1 00	C		Coult I		75 125	360	
	1 n1 00			5		75 125	200	
oron filtered	1 n1 00			1		75 125	200	
Cadmium filtered	1 n1 00			0		75 125	200	
Cobalt filtered	1 n1 00			0		75 125	200	
	1 n1 00			0		75 125	200	
Copper milered				0		10120	ass	



Te t	ab Sam e	A Source	nit	eut1			Acce tance imit	a imit	ua i in ode
ead filtered	1 n1 00	С		7			75 125	ass	
an anese filtered	1 n1 212	С		5			75 125	ass	
ic el filtered	1 n1 00	С		2			75 125	ass	
Selenium filtered	1 n1 00	С		10			75 125	ass	
inc filtered	1 n1 00	С		2			75 125	ass	
Te t	ab Sam e	A Source	nit	e ut1			Acce tance imit	a imit	uaiin ode
u icate							r 1		
Tota eco erab e drocarbon	1 N ract	ion		esult 1	esult 2				
тсс	A1 n1 5	С	m /	0.02	0.02	1	0	ass	
T C10 C1	1 n1 1 1	С	m /	0.05	0.05	1	0	ass	
T C15 C2	1 n1 1 1	С	m /	0.1	0.1	1	0	ass	
T C2 C	1 n1 1 1	С	m /	0.1	0.1	1	0	ass	
u icate									
onoc c ic Aromatic drocarbon	1			esult 1	esult 2				
en ene	A1 n1 5	С	m /	0.001	0.001	1	0	ass	
Eth Iben ene	A1 n1 5	С	m /	0.001	0.001	1	0	ass	
Isoprop I ben ene Cumene	A1 n1 5	С	m /	0.001	0.001	1	0	ass	
m p ehes	A1 n1 5	С	m /	0.002	0.002	1	0	ass	
o lene	A1 n1 5	С	m /	0.001	0.001	1	0	ass	
St rene	A1 n1 5	С	m /	0.001	0.001	1	0	ass	
Toluene	A1 n1 5	С	m /	0.001	0.001	1	0	ass	
enes Total	A1 n1 5	С	m /	0.00	0.00	1	0	ass	
u icate									
Tota eco erab e drocarbon	2 1 N ract	ion		esult 1	esult 2				
aphthalene	A1 n1 5	С	m /	0.02	0.02	1	0	ass	
T C C10	A1 n1 5	С	m /	0.02	0.02	1	0	ass	
T C10 C1	1 n1 1 1	С	m /	0.05	0.05	1	0	ass	
T C1 C	1 n1 1 1	С	m /	0.1	0.1	1	0	ass	
ТССО	1 n1 1 1	С	m /	0.1	0.1	1	0	ass	
u icate									
				esult 1	esult 2				
C anide total	1 n1 2	С	m /	0.005	0.005	1	0	ass	
u icate							r 1		
ea eta i tered	ŕ			esult 1	esult 2				
Aluminium filtered	1 n1 00	С	m /	0.05	0.05	1	0	ass	
Arsenic filtered	1 n1 00	С	m /	0.01	0.017	7.0	0	ass	
oron filtered	1 n1 00	С	m /	0.0	0.0 0	.0	0	ass	
Cadmium filtered	1 n1 00	С	m /	0.0002	0.0002	1	0	ass	
Cobalt filtered	1 n1 00	С	m /	0.0012	0.0011	.0	0	ass	
Copper filtered	1 n1 00	С	m /	0.001	0.001	1	0	ass	
Iron filtered	1 n200 7	С	m /	17	1	5.0	0	ass	
ead filtered	1 n1 00	С	m /	0.001	0.001	1	0	ass	
an anese filtered	1 n1 00	С	m /	0.1	0.1	.0	0	ass	
ic el filtered	1 n1 00	С	m /	0.002	0.001	1	0	ass	
Selenium filtered	1 n1 00	С	m /	0.001	0.001	17	0	ass	
inc filtered	1 n1 00	С	m /	0.00 2	0.00 0	.0	0	ass	



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ua i ier ode omment

ode e cri tion

 2 is determined b arithmeticall subtractin the naphthalene alue from the C10 C1 alue. The naphthalene alue used in this calculation is obtained from olatiles

 01
 b e Trap anal sis .

 here we ha e reported both olatile T C S and semi olatile C S naphthalene data, results ma not be identical. ro ided correct sample handlin protocols ha e been followed, an obser ed differences in results are li el to be due to procedural differences within each methodolo . esults determined b both techni ues ha e passed

 02
 all A C acceptance criteria, and are entirel technicall alid.

1 is determined b arithmeticall subtracting the data and the answer of the concentrations of TE and tes. The C C10 alue is obtained b uantitating a ainst a standard of miled aromatic/aliphatic analities.

Aut ori ed

Adrian	Tabacchiera	Client Ser ices
Carroll	ee	Senior Anal st olatile IC
Emil	osenber	Senior Anal st etal IC
uon	e	Senior Anal st Inor anic IC
Stace	en ins	Senior Anal st Or anic IC

enn ac on

aborator ana er

Final report - this Report replaces any previously issued Report

Indicates ot e uested

Indicates ATA accreditation does not co er the performance of this ser ice

ncertaint data is a ailable on re uest

Eurofins m t shall not be liable for loss, cost, dama es or e penses incurred b the client, or an other person or company, nesultin from the use of an information or interpretation i en in this report. In no case shall Eurofins m t be liable for coses use until adama es includin, but not limited to, lost profits, dama es for dualines and lost production arism. This document shall not be reproduced e cepin full and relates on 1 othe instested. In discuss, the tests were thereas, the tests were and the shall be formed on the shall be formed on the shall be reproduced execting the cepin full and relates on 1 other instested.

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S MARIBYRN	ONG RD, FOOTSCRAY, VIC. 3011	20	n - Ultra Tra	ico Organics)				COD SEDI	IENCE N	UMBER	Fieb	a / frezen ko	o bride p	Not Note		and the	and and	A STORE
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R NUMBER:							8	~										
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volce to : rorqu	iza@onvironmontaloorthsciences.	com			0	2		0/22	2		5	I	Ya	•				
ENTS/SPECIAL	HANDLING/STORAGE OR DISPOS	AL:											10-			2	2	5
ISE ONLY	SAMPLE DETA MATRIX: Solid(S) M	ALLS Veter(W)		CONTAINER INFORM	ATION	ANALYSIS R	EQUIRED In	cluding SUI of Test (white	res (n0	Stato Co	dos musi	to fished to the	Constant of the second	5 (prico)	1	Addition	al Inform	ation
	SAMPLEID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	ES IONIC BALANCE BUITE - includes - BUITE - includes - BI, SO4, Alk, F, NO3, Seactive P, Ammonia	recorded on the COC)	Cd, Cd, Cd, Fe, Pb, NI, As, Cd, Cu, Fe, Pb, NI, Zn, Co, Se, B & Mn	sbinsy3 leto1	HAM - AA7043 9n9l6rbrigeN - HA7043	TPH (C6-C36) plus TRH	Sy TPH - on Silica gel clean up - on		And HISB OULDMAN	Tww.chulbearer	Нд Ыай	qmət bləif	
-	Frin 43	9	3		8	1)		>	>	1	2		Y	-)	54.2	18 4	
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ť	EW17	nts >	>)		and the second	10 million	1	₹356 				の語		認識		
	D WELL A	246		市場の温暖が温暖す	9			になっていた	「「「	>	2			記念	>	の相関になっていた。		ないの
20		2+16	常いな	の時間のためになっていた。	の人気の	「「「「「「「「「」」」」	の一部に			No. State			A Social	之前	7	思知		朝鮮朝
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rom Sent To Sub ect	e in Or ui a ror ui a eesicontractin .com ednesda , 2 une 201 En uiries Adrian Tabacchiera E Eurofins m t Sample eceipt Ad ice eport Site 21007 ST E O E AS O S
Hi James and Adrian,	
Could you please char	ge the BTEX and Trimethylebenzenes to MAH's.
Please confirm if you	have received my request.
Regards	
Regin	
Original Message From: enquiries.melb@ Sent: Tuesday, 25 Jun To: Regin Orquiza Subject: Eurofins m MELBOURNE GASWORKS	mgtlabmark.com.au [mailto:enquiries.melb@mgtlabmark.com.au] ue 2013 7:12 PM ngt Sample Receipt Advice - Report 383844 : Site 210074 STH
Dear Client,	
Please find attached (COC). It is importa correct.	sample receipt advice, summary sheet and your chain of custody int that you check these documents to ensure that the details are
If there are any irre as soon as possible t	gularities then please contact your Eurofins mgt client manager to make certain they get amended.
Your client manager	will be your point of contact for queries and test results.
Your client manager's	s contact details can be found on your SRA.
Kind Regards	
James Gould Eurofins mgt	
Ph:03 8564 5025 Email:enquiries@mgtla	ubmark.com.au
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n ironmenta art Science e e 1 arib rnon Street oot cra 11



Certificate of Anal sis NATA Accredited Accreditation Number 1261 Site Number 1254

Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention

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e ort Client eference ecei ed ate

21007 ST E O un 25, 201 E AS O S

ient Sam e			ѕ т
Sam e atri			ater
uro in m t Sam e No			1 n1 1 6
ate Sam ed			un 24 2 1
Test/ eference	0	nit	
Tota eco erab e drocarbon 1 N ract	ion		
тсс	0.02	m /	0.02
T C10 C1	0.05	m /	0.05
T C15 C2	0.1	m /	0.1
T C2 C	0.1	m /	0.1
T C10 Total	0.1	m /	0.1
onoc c ic Aromatic drocarbon			
en ene	0.001	m /	0.001
Eth Iben ene	0.001	m /	0.001
Isoprop I ben ene Cumene	0.001	m /	0.001
m p ehes	0.002	m /	0.002
o lene	0.001	m /	0.001
St rene	0.001	m /	0.001
Toluene	0.001	m /	0.001
enes Total	0.00	m /	0.00
luoroben ene surr.	1		
Tota eco erab e drocarbon 2 1 N ract	ion		
aphthalene ⁰²	0.02	m /	0.02
T C C10	0.02	m /	0.02
T C C10 less TE 1 °	0.02	m /	0.02
T C10 C1	0.05	m /	0.05
T C10 C1 less aphthalene 2 ⁰¹	0.05	m /	0.05
T C1 C	0.1	m /	0.1
ТССО	0.1	m /	0.1
o c c ic Aromatic drocarbon			
aphthalene	0.001	m /	0.001
	T		
Ammonia as	0.01	m /	0.5
C anide total	0.005	m /	0.005
Sulphate as S	5	m /	00
ea eta	1		
Aluminium filtered	0.05	m /	0.05
Arsenic filtered	0.001	m /	0.00
oron filtered	0.05	m /	1.2
Cadmium filtered	0.0002	m /	0.0007
Cadmium filtered Cobalt filtered	0.0002	m / m /	0.0007



ient Sam e Sam e atri uro in m t Sam e No ate Sam ed			S T ater 1 n1 1 6 un 24 2 1
Test/ eference	0	nit	
ea eta			
Iron filtered	0.05	m /	0.5
ead filtered	0.001	m /	0.001
an anese filtered	0.005	m /	
ic el filtered	0.001	m /	0.05
Selenium filtered	0.001	m /	0.002
inc filtered	0.001	m /	0.0



Sam e i tor

here samples are submitted/anal sed o er se eral da s, the last date of e traction and anal sis is reported. A recent re iew of our I S has resulted in the correction or clarification of some method identifications. ue to this, some of the method reference information on reports has chan ed. owe er, no substanti e chan e has been made to our laborator methods, and as such there is no chan e in the alidit of current or pre ious results re ardin both ualit and ATA accreditation.

e cri tion	Te tin Site	tracted	o din Time
Total eco erable drocarbons 1 E ractions	elbourne	un 2 , 201	7 a
ethod T C C T 100A			
Total eco erable drocarbons 201 E ractions	elbourne	un 2 , 201	7 a
ethod T O 2010			
onoc clic Aromatic drocarbons	elbourne	un 2 , 201	7 a
ethod SE A 2 0 T 50A onoc clic Aromatic drocarbons			
ol c clic Aromatic drocarbons	elbourne	un 2 , 201	7 a
ethod SE A 270 ol c clic Aromatic drocarbons			
Ammonia as	elbourne	un 25, 201	2 a
ethod A A 500 Ammonia itro en b IA			
C anide total	elbourne	un 2 , 201	1 a
ethod SE A 010 C anide			
Sulphate as S	elbourne	un 2 , 201	2 a
ethod A A 500 SO b iscrete Anal ser			
ea etals filtered	elbourne	un 25, 201	10 a
ethod SE A 020 ea etals			



uro in m t nterna ua it ontro e ie and o ar

enera

1. aborator C results for ethod lan s, uplicates, atri Spi es, and aborator Control Samples are included in this C report where applicable. Additional C data ma be a ailable on re uest.

- 2. All soil results are reported on a dr basis, unless otherwise stated.
- . Actual s are matri dependant. uoted s ma be raised where sample e tracts are diluted due to interferences.
- . esults are uncorrected for matri spi es or surro ate reco eries.
- 5. S OC anal sis on waters are performed on homo enised, unfiltered samples, unless noted otherwise.
- . Samples were anal sed on an as recei ed basis. 7. This report replaces an interim results pre iousl issued.

o din Time

lease refer to Sample reser ation and Container uide for holdin times S 001.

or samples recei ed on the last da of holdin time, notification of testin re uirements should ha e been recei ed at least hours prior to sample receipt deadlines as stated on the Sample eceipt Ac nowled ment.

If the aborator did not recei e the information in the re uired timeframe, and re ardless of an other inte rit issues, suitabl ualified results ma still be reported.

oldin times appl from the date of samplin , therefore compliance to these ma be outside the laborator s control.

N T p duplicates are reported as a ran e OT as

N TS

m	milli rams per ilo ram	m	milli rams per litre
u	micro rams per litre	m	arts per million
	b arts per billion		ercenta e
or	1 m Or anisms per 100 millilitres	NT	nits
	N 1 m ost robable umber of or anisms per 100 millilitres		

T S	
r	here a moisture has been determined on a solid sample the result is e pressed on a dr basis.
	imit of eportin .
S	Addition of the anal te to the sample and reported as percenta e reco er .
	elati e ercent ifference between two uplicate pieces of anal sis.
S	aborator Control Sample reported as percent reco er
	Certified eference aterial reported as percent reco er
et od an	In the case of solid samples these are performed on laborator certified clean sands.
	In the case of water samples these are performed on de ionised water.
Surr Surro ate	The addition of a li e compound to the anal te tar et and reported as percenta e reco er .
u icate	A second piece of anal sis from the same sample and reported in the same units as the result to show comparison.
atc u icate	A second piece of anal sis from a sample outside of the clients batch of samples but run within the laborator batch of anal sis.
atc S	Spi e reco er reported on a sample from outside of the clients batch of samples but run within the laborator batch of anal sis.
S A	nited States En ironment rotection Authorit
A A	American ublic ealth Association
AS	Australian Standard eachin rocedure AS .
т	To icit Characteristic eachin rocedure
	Chain of Custod
SA	Sample eceipt Ad ice
	Client arent C was performed on samples pertainin to this report
N	on Client arent C performed on samples not pertainin to this report, C is representati e of the se uence or batch that client samples were anal

A TAN T A

uplicates lobal uplicates Acceptance Criteria is 0 howe er the followin acceptance uidelines are e uall applicable

esults 10 times the O o imit

esults between 10 20 times the O must lie between 0 50

esults 20 times the O must lie between 0 0

Surro ate eco eries eco eries must lie between 50 150 henols 20 1 0 .

ATA N A NTS

1. here a result is reported as a less than , hi her than the nominated O, this is due to either matri interference, e tract dilution re uired due to interferences or contaminant le els within the sample, hi h moisture content or insufficient sample pro ided.

- 2. uplicate data shown within this report that states the word ATC is a atch uplicate from outside of our sample batch, but within the laborator sample batch at a 1 10 ratio. The arent and uplicate data shown is not data from our samples.
- . Or anochlorine esticide anal sis where reportin CS data, To ophene Chlordane are not added to the CS.
- . Or anochlorine esticide anal sis where reportin Spi e data, To ophene is not added to the Spi e.
- 5. Total eco erable drocarbons where reportin Spi e CS data, a sin le spi e of commercial drocarbon products in the ran e of C12 C 0 is added and it s Total eco er is reported in the C10 C1 cell of the eport.
- . p and ree Chlorine anal sed in the laborator Anal sis on this test must be in within 0 minutes of samplin .Therefore laborator anal sis is unli el to be completed within holdin time. Anal sis will be in as soon as possible after sample receipt.
- 7. eco er ata Spi es Surro ates where chromato raphic interference does not allow the determination of eco er the term I T appears a ainst that anal te.
- . ol chlorinated iphen Is are spi ed onl usin Arochlor 12 0 in atri Spi es and CS s.
- . or atri Spi es and CS results a dash in the report means that the specific anal te was not added to the C sample.
- 10. uplicate s are calculated from raw anal tical data thus it is possible to ha e two sets of data.

sed within



Te t	nit	eut1		Acce tance imit	a imit	ua i in ode
et od an		- · · · ·				
Tota eco erab e drocarbon 1 N raction T	66					
	m /	0.02		0.02	200	
T C10 C1	m /	0.02		0.02	ass	
T C15 C2	m /	0.1		0.1	ass	
T C2 C	m /	0.1		0.1	ass	
et od an						
onoc c ic Aromatic drocarbon S A 26 T 5 A	\					
	m /	0.001		0.001	266	
Eth liben ene	m /	0.001		0.001	255	
Isopron I ben ene Cumene	m /	0.001		0.001	ass	
m p ehes	m /	0.002		0.002	ass	
o lene	m /	0.001		0.001	ass	
St rene	m /	0.001		0.001	ass	
Toluene	m /	0.001		0.001	ass	
enes Total	m /	0.00		0.00	ass	
et od an						
Tota eco erab e drocarbon 2 1 N raction	т					
aphthalene	m /	0.02		0.02	ass	
T C C10	m /	0.02		0.02	ass	
T C10 C1	m /	0.05		0.05	ass	
T C1 C	m /	0.1		0.1	ass	
ТССО	m /	0.1		0.1	ass	
et od an						
o c c ic Aromatic drocarbon S A 2 o c c ic A	romatic					
aphthalene	m /	0.001		0.001	ass	
et od an		0.001	I	01001		
Ammonia as	m /	0.01		0.01	ass	
C anide total	m /	0.005		0.005	ass	
Sulphate as S	m /	5		5	ass	
et od an						
ea eta itered SA62 ea eta						
Aluminium filtered	m /	0.05		0.05	ass	
Arsenic filtered	m /	0.001		0.001	ass	
oron tiltered	m /	0.05		0.05	ass	
Cabalt filtered	m /	0.0002		0.0002	ass	
Copper filtered	m /	0.001		0.001	365	
Iron filtered	m /	0.001		0.001	200	
ead filtered	m /	0.001		0.001	ass	
ic el filtered	m /	0.001		0.001	ass	
Selenium filtered	m /	0.001		0.001	ass	
inc filtered	m /	0.001		0.001	ass	
S eco er						
Tota eco erab e drocarbon 1 N raction T	6 6					
ТСС				70 1 0	ass	
T C10 C1		100		70 1 0	ass	
S eco er		· ·				
onoc c ic Aromatic drocarbon S A 26 T 5 A onoc c ic Aromatic drocarbon	\					



Te t			nit	e ut1		Acce tance imit	a imit	uaiin ode
en ene						70 1 0	ass	
Eth Iben ene						70 1 0	ass	
m p ehes				101		70 1 0	ass	
Toluene				5		70 1 0	ass	
enes Total				101		70 1 0	ass	
S eco er				<u> </u>	1			
Tota eco erab e drocarbon	2 1 N ract	tion	т					
T C C10						70 1 0	ass	
T C10 C1				101		7010	200	
S eco er				101		1010	400	
o c c ic Aromatic drocarbon	S A 2 0	c cicA	romatic					
anhthalene				72		70 1 0	200	
S eco er				12		7010	435	
0 000 01								
Ammonia as				0		70 1 0	200	
C anide total				7		70 1 0	200	
Sulphate as S				10		7010	200	
S eco er						1010	033	
	oa ota			[
Aluminium filtered	να σια			1		0 120	200	
Arsenic filtered				10		0 120	200	
oron filtered				5		0 120	200	
Cadmium filtered				100		0 120	200	
				7		0 120	200	
Coppor filtered				10		0 120	200	
Iron filtered				10		0 120	d55	
				5		0 120	d55	
				11		0 120	200	
ic el filtered					0 120	200		
Selenium filtered					0 120	d55		
Selenium intered				100		0 120	d55	
		•		100		0 120	ass	ua i in
Te t	ab Sam e	Source	nit	e ut1		imit	a imit	ode
Sie ecoer	4							
Tota eco erab e drocarbon	<u>1 N raci</u>	tion		esult 1		70.4.0		
	1 n1 151	C		11		7010	ass	
Sie ecoer								
onoc c ic Aromatic drocarbon	4	0				70.4.0		
En ene	1 11 151			107		7010	ass	
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ni p enes	1 01 151			11			ass	
	1 11 151	C		117		7010	ass	
Toluene	1 11 151	C		122		7010	ass	
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Tete eco er	2 4 1	tion						
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Ammonia as	A1 n1 5	U A		2		7010	ass	
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Sie ecoer								
ea eta i tered				esult 1				



Te t	ab Sam e	A Source	nit	eut1			Acce tance imit	a imit	uaiin ode
Arsenic filtered	1 n1 1	С					75 125	ass	
oron filtered	1 n1 1	С		77			75 125	ass	
Cadmium filtered	1 n1 1	С					75 125	ass	
Cobalt filtered	1 n1 1	С		0			75 125	ass	
Copper filtered	1 n1 1	С					75 125	ass	
Iron filtered	1 n172 1	С		7			75 125	ass	
ead filtered	1 n1 1	С					75 125	ass	
ic el filtered	1 n1 1	С					75 125	ass	
Selenium filtered	1 n1 1	С		0			75 125	ass	
inc filtered	1 n1 1	С		7			75 125	ass	
Te t	ab Sam e	A Source	nit	eut1			Acce tance imit	a imit	uaiin ode
u icate				1					
Tota eco erab e drocarbon	1 N ract	ion		esult 1	esult 2				
тсс	1 n1 150	С	m /	0.02	0.02	1	0	ass	
u icate				i			1		
onoc c ic Aromatic drocarbor	1			esult 1	esult 2				
en ene	1 n1 150	С	m /	0.001	0.001	1	0	ass	
Eth Iben ene	1 n1 150	С	m /	0.001	0.001	1	0	ass	
Isoprop I ben ene Cumene	1 n1 150	С	m /	0.001	0.001	1	0	ass	
m p ehes	1 n1 150	С	m /	0.002	0.002	1	0	ass	
o lene	1 n1 150	С	m /	0.001	0.001	1	0	ass	
St rene	1 n1 150	С	m /	0.001	0.001	1	0	ass	
Toluene	1 n1 150	С	m /	0.001	0.001	1	0	ass	
enes Total	1 n1 150	С	m /	0.00	0.00	1	0	ass	
u icate				1			1 1		
Tota eco erab e drocarbon	2 1 N ract	ion		esult 1	esult 2				
aphthalene	1 n1 150	С	m /	0.02	0.02	1	0	ass	
T C C10	1 n1 150	С	m /	0.02	0.02	1	0	ass	
u icate				1					
	1			esult 1	esult 2				
Ammonia as	A1 n1 5	С	m /	0.01	0.01	1	0	ass	
C anide total	1 n17	С	m /	0.005	0.005	1	0	ass	
Sulphate as S	1 n1	С	m /	5	5	1	0	ass	
u icate				1	1				
ea eta i tered	1			esult 1	esult 2				
Aluminium filtered	1 n1 1	C	m /	0.1	0.1	20	0	ass	
Arsenic filtered	1 n1 1	C	m /	0.001	0.0012	.7	0	ass	
oron filtered	1 n1 1	C	m /	0.05	0.052	2.	0	ass	
Cadmium filtered	1 n1 1	С	m /	0.0002	0.0002	1	0	ass	
Cobalt filtered	1 n1 1	С	m /	0.001	0.001	1	0	ass	
Copper filtered	1 n1 1	С	m /	0.001	0.001	1	0	ass	
Iron filtered	1 n172 1	С	m /	0.05	0.05	1	0	ass	
ead filtered	1 n1 1	С	m /	0.001	0.001	1	0	ass	
ic el filtered	1 n1 1	С	m /	0.001	0.001	1	0	ass	
Selenium filtered	1 n1 1	С	m /	0.001	0.001	1	0	ass	
inc filtered	1 n1 1	C	m /	0.00	0.007	1	0	ass	



omment

Custod Seals Intact if used /A
Attempt to Chill was e ident es
Sample correctl preser ed es
Or anic samples had Teflon liners es
Sample containers for olatile anal sis recei ed with minimal headspace es
Samples recei ed within oldin Time es
Some samples ha e been subcontracted o

ua i ier ode omment

ode e cri tion

 2 is determined b arithmeticall subtractin the naphthalene alue from the C10 C1 alue. The naphthalene alue used in this calculation is obtained from olatiles

 01
 b e Trap anal sis.

 here we ha e reported both olatile T C S and semi olatile C S naphthalene data, results ma not be identical. ro ided correct sample handlin protocols ha e been followed, an obser ed differences in results are li el to be due to procedural differences within each methodolo . esults determined b both techni use ha e passed

 02
 all A C acceptance criteria, and are entirel technicall alid.

all A C acceptance criteria, and are entried technical alid.
 1 is determined b arithmeticall subtractin the Total TE alue from the C C10 alue. The Total TE alue is obtained b summin the concentrations of TE anal tes. The C C10 alue is obtained b uantitatin a ainst a standard of mi ed aromatic/aliphatic anal tes.

Aut ori ed

Adrian	Tabacchiera	Client Ser ices
Carroll	ee	Senior Anal st olatile IC
Emil	osenber	Senior Anal st etal IC
uon	e	Senior Anal st Inor anic IC
Stace	en ins	Senior Anal st Or anic IC

enn ac on

aborator ana er

Final report - this Report replaces any previously issued Report

Indicates ot e uested

Indicates ATA accreditation does not co er the performance of this ser ice

ncertaint data is a ailable on re uest

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						EES IONIC PH, TDS, C	ulnommA n ed Jeum	Dissolved Ni, Zn, Co	Total Cyan	- H#20dE	2-90) H9T	Silica gel (Ha bielt	imot biol ³			
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** VOA VIAI ISCI Press ** VOA VIAI ISCI Press * Ziaz Aceditta Presso	cal: P = Unpresente Plates: H = Natz Presen eves. VB = VOA VII: Sodom Bluiphile Presen net Bodie, E = EDTA Presened Batter; ST = S	te Partic Offic - A vec'V5 - VOA Val berie Bude, ASS -	Galderic Preserve District Press Praetis Bag 1	NG CATC, GAN = SECOND TYONG Renad; AV = Airfreight Unprese M Auld Surgerate Soft: B = U.S.	metVel 5G - personed lag	dr. 5 = Sodura II) Sulfado Preserved	Amber Glat	H-HCIP	rened 71	ING. HS	wpresente, HCI preve	Arr-Autom	botie; 5P = 5ult	is Permet	S Planks: F	- Famaidehyde Prese		
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Raymond Thai

From: Carol Walsh Sent: Wednesday, 26 June 2013 9:16 AM Samples Melbourne To: REVISED COC - EM1306738-ENVIROMENTAL EARTH SCIENCES Subject: img-626090130.pdf Attachments: Importance: High ATTACHED REVISED COC. Please send the SPLIT 2 sample to MGT as per COC. Ş------Original Message-----From: Regin Orquiza [mailto:rorquiza@eesicontracting.com] Sent: Wednesday, 26 June 2013 9:14 AM To: Carol Walsh Subject: RE: ISSUES - EM1306738-ENVIROMENTAL EARTH SCIENCES Hi Carol, Please find the attached updated CoC showing the dup/split 2 required analytes. Please send the Split 2 sample to MGT. Regards Regin Regin Orquiza - Senior Environmental Engineer PO Box 2253, Footscray, Victoria 3011 p: 03 9687 1666 d: 03 8398 4403 m: 0448 888 593 f: 03 9687 1844 rorquiza@environmentalearthsciences.com www.environmentalearthsciences.com

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P Please consider the environment before printing this e-mail

-----Original Message-----From: Carol Walsh [mailto:Carol.Walsh@alsglobal.com] Sent: Wednesday, 26 June 2013 8:50 AM To: Regin Orquiza Subject: ISSUES - EM1306738-ENVIROMENTAL EARTH SCIENCES Regin For this attached work order, EM1306738, we have received two extra sample - DUP 2 & SPLIT 2 .

Please advise if any analysis is required on these samples, or should SPLIT 2 be sent off to another lab.

Refi

Kind Regards

Carol Walsh Senior Client Services Officer ALS | Environmental Division 4 Westall Rd Springvale, VIC. 3171 Australia

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Certificate of Anal sis NATA Accredited Accreditation Number 1261 Site Number 1254

Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention

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e ort Client eference ecei ed ate

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ient Sam e			ST2
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uro in m t Sam e No			1 n1 2
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Test/ eference	0	nit	
Tota eco erab e drocarbon 1 N raci	ion		
ТСС	0.02	m /	0.02
T C10 C1	0.05	m /	0.05
T C15 C2	0.1	m /	0.1
T C2 C	0.1	m /	0.1
T C10 Total	0.1	m /	0.1
onoc c ic Aromatic drocarbon			
en ene	0.001	m /	0.001
Eth Iben ene	0.001	m /	0.001
Isoprop I ben ene Cumene	0.001	m /	0.001
m p ehes	0.002	m /	0.002
o lene	0.001	m /	0.001
St rene	0.001	m /	0.001
Toluene	0.001	m /	0.001
enes Total	0.00	m /	0.00
luoroben ene surr.	1		5
Tota eco erab e drocarbon 2 1 N ract	ion		
aphthalene ⁰²	0.02	m /	0.02
T C C10	0.02	m /	0.02
T C C10 less TE 1 °	0.02	m /	0.02
T C10 C1	0.05	m /	0.05
T C10 C1 less aphthalene 2 ⁰¹	0.05	m /	0.05
T C1 C	0.1	m /	0.1
T C C O	0.1	m /	0.1
o c c ic Aromatic drocarbon			
aphthalene	0.001	m /	0.001
	1	1	
C anide total	0.005	m /	0.0
ea eta	1		
Aluminium filtered	0.05	m /	0.05
Arsenic filtered	0.001	m /	0.2
oron filtered	0.05	m /	0.0
Cadmium filtered	0.0002	/	0.0002
Cobalt filtered	0.001	/	0.001
Copper filtered	0.001	m /	0.001
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ient Same Same atri uro in mt Same No ate Samed			S T 2 ater 1 n1 2 un 25 2 1
Test/ eference	0	nit	
ea eta			
an anese filtered	0.005	m /	0.17
ic el filtered	0.001	m /	0.01
Selenium filtered	0.001	m /	0.00
inc filtered	0.001	m /	0.010



Sam e i tor

here samples are submitted/anal sed o er se eral da s, the last date of e traction and anal sis is reported. A recent re iew of our 1 S has resulted in the correction or clarification of some method identifications. ue to this, some of the method reference information on reports has chan ed. owe er, no substanti e chan e has been made to our laborator methods, and as such there is no chan e in the alidit of current or pre ious results re ardin both ualit and ATA accreditation.

e cri tion	Te tin Site	tracted	o din Time
Total eco erable drocarbons 1 E ractions	elbourne	un 2 , 201	7 a
ethod T C C T 100A			
Total eco erable drocarbons 201 E ractions	elbourne	un 2 , 201	7 a
ethod T O 2010			
onoc clic Aromatic drocarbons	elbourne	un 2 , 201	7 a
ethod SE A 2 0 T 50A onoc clic Aromatic drocarbons			
ol c clic Aromatic drocarbons	elbourne	un 2 , 201	7 a
ethod SE A 270 ol c clic Aromatic drocarbons			
C anide total	elbourne	un 27, 201	1 a
ethod SE A 010 C anide			
ea etals filtered	elbourne	un 2 , 201	10 a
ethod SE A 020 ea etals			



uro in m t nterna ua it ontro e ie and o ar

enera

1. aborator C results for ethod lan s, uplicates, atri Spi es, and aborator Control Samples are included in this C report where applicable. Additional C data ma be a ailable on re uest.

- 2. All soil results are reported on a dr basis, unless otherwise stated.
- . Actual s are matri dependant. uoted s ma be raised where sample e tracts are diluted due to interferences.
- . esults are uncorrected for matri spi es or surro ate reco eries.
- 5. S OC anal sis on waters are performed on homo enised, unfiltered samples, unless noted otherwise.
- . Samples were anal sed on an as recei ed basis. 7. This report replaces an interim results pre iousl issued.

o din Time

lease refer to Sample reser ation and Container uide for holdin times S 001.

or samples recei ed on the last da of holdin time, notification of testin re uirements should ha e been recei ed at least hours prior to sample receipt deadlines as stated on the Sample eceipt Ac nowled ment.

If the aborator did not recei e the information in the re uired timeframe, and re ardless of an other inte rit issues, suitabl ualified results ma still be reported.

oldin times appl from the date of samplin , therefore compliance to these ma be outside the laborator s control.

N T p duplicates are reported as a ran e OT as

N TS

m	milli rams per ilo ram	m	milli rams per litre
u	micro rams per litre	m	arts per million
	b arts per billion	ercenta e	
or	1 m Or anisms per 100 millilitres	NT	nits
	N 1 m ost robable umber of or anisms per 100 millilitres		

T S	
r	here a moisture has been determined on a solid sample the result is e pressed on a dr basis.
	imit of eportin.
S	Addition of the anal te to the sample and reported as percenta e reco er .
	elati e ercent ifference between two uplicate pieces of anal sis.
S	aborator Control Sample reported as percent reco er
	Certified eference aterial reported as percent reco er
et od an	In the case of solid samples these are performed on laborator certified clean sands.
	In the case of water samples these are performed on de ionised water.
Surr Surro ate	The addition of a li e compound to the anal te tar et and reported as percenta e reco er .
u icate	A second piece of anal sis from the same sample and reported in the same units as the result to show comparison.
atc u icate	A second piece of anal sis from a sample outside of the clients batch of samples but run within the laborator batch of anal sis.
atc S	Spi e reco er reported on a sample from outside of the clients batch of samples but run within the laborator batch of anal sis.
S A	nited States En ironment rotection Authorit
A A	American ublic ealth Association
AS	Australian Standard eachin rocedure AS .
т	To icit Characteristic eachin rocedure
	Chain of Custod
S A	Sample eccipt Ad ice
	Client arent C was performed on samples pertainin to this report
N	on Client arent C performed on samples not pertainin to this report, C is representati e of the se uence or batch that client samples were anal sed within

A TAN T A

uplicates lobal uplicates Acceptance Criteria is 0 howe er the followin acceptance uidelines are e uall applicable

esults 10 times the O o imit

esults between 10 20 times the O must lie between 0 50

esults 20 times the O must lie between 0 0

Surro ate eco eries eco eries must lie between 50 150 henols 20 1 0 .

ATA N A NTS

1. here a result is reported as a less than , hi her than the nominated O, this is due to either matri interference, e tract dilution re uired due to interferences or contaminant le els within the sample, hi h moisture content or insufficient sample pro ided.

- 2. uplicate data shown within this report that states the word ATC is a atch uplicate from outside of our sample batch, but within the laborator sample batch at a 1 10 ratio. The arent and uplicate data shown is not data from our samples.
- . Or anochlorine esticide anal sis where reportin CS data, To ophene Chlordane are not added to the CS.
- . Or anochlorine esticide anal sis where reportin Spi e data, To ophene is not added to the Spi e.
- 5. Total eco erable drocarbons where reportin Spi e CS data, a sin le spi e of commercial drocarbon products in the ran e of C12 C 0 is added and it s Total eco er is reported in the C10 C1 cell of the eport.
- . p and ree Chlorine anal sed in the laborator Anal sis on this test must be in within 0 minutes of samplin . Therefore laborator anal sis is unli el to be completed within holdin time. Anal sis will be in as soon as possible after sample receipt.
- 7. eco er ata Spi es Surro ates where chromato raphic interference does not allow the determination of eco er the term I T appears a ainst that anal te.
- . ol chlorinated iphen Is are spi ed onl usin Arochlor 12 0 in atri Spi es and CS s.
- . or atri Spi es and CS results a dash in the report means that the specific anal te was not added to the C sample.
- 10. uplicate s are calculated from raw anal tical data thus it is possible to ha e two sets of data.


Te t	nit	eut1		Acce tance imit	a imit	uaiin ode
et od an		r	1	1		
Tota eco erab e drocarbon 1 N raction T	66					
T C10 C1	m /	0.05		0.05	ass	
T C15 C2	m /	0.1		0.1	ass	
T C2 C	m /	0.1		0.1	ass	
et od an						
onoc c ic Aromatic drocarbon S A 26 T 5 A onoc c ic Aromatic drocarbon	A					
en ene	m /	0.001		0.001	ass	
Eth Iben ene	m /	0.001		0.001	ass	
Isoprop I ben ene Cumene	m /	0.001		0.001	ass	
m p ehes	m /	0.002		0.002	ass	
o lene	m /	0.001		0.001	ass	
St rene	m /	0.001		0.001	ass	
Toluene	m /	0.001		0.001	ass	
enes Total	m /	0.00		0.00	ass	ļ
et od an				1		
Tota eco erab e drocarbon 2 1 N raction 2 1	Т					
aphthalene	m /	0.02		0.02	ass	
T C10 C1	m /	0.05		0.05	ass	
T C1 C	m /	0.1		0.1	ass	
T C C O	m /	0.1		0.1	ass	
et od an						
o c c ic Aromatic drocarbon S A 2 o c c ic A drocarbon	romatic					
aphthalene	m /	0.001		0.001	ass	
et od an		[
C anida total	m /	0.005		0.005		
ot od on	111 /	0.005		0.005	d55	
et ou an		[
Aluminium filtered	m /	0.05		0.05	ass	
Arsenic filtered	m /	0.001		0.001	ass	
oron filtered	m /	0.05		0.05	ass	
Cadmium filtered	m /	0.0002		0.0002	ass	
Cobalt filtered	m /	0.001		0.001	ass	
Copper filtered	m /	0.001		0.001	ass	
Iron filtered	m /	0.05		0.05	ass	
ead filtered	m /	0.001		0.001	ass	
an anese filtered	m /	0.005		0.005	ass	
ic el filtered	m /	0.001		0.001	ass	
Selenium filtered	m /	0.001		0.001	ass	
inc filtered	m /	0.001		0.001	ass	
S eco er						
Tota eco erab e drocarbon 1 N raction T T 1 A	6 6					
тсс		102		70 1 0	ass	
T C10 C1		1		70 1 0	ass	
S eco er						
onoc c ic Aromatic drocarbon S A 26 T 5 A onoc c ic Aromatic drocarbon	\					
en ene				70 1 0	ass	
Eth Iben ene		10		70 1 0	ass	
m p ehes		111		7010	ass	1



Te t			nit	eut1		Acce tance imit	a imit	uaiin ode
Toluene				102		70 1 0	ass	
enes Total				10		70 1 0	ass	
S eco er								
Tota eco erab e drocarbon 2 1	2 1 N ra	ction	Т					
T C C10				102		70 1 0	ass	
T C10 C1				2		70 1 0	ass	
S eco er								
o c c ic Aromatic drocarbon drocarbon	S A 2	o ccicA	romatic					
aphthalene				72		70 1 0	ass	
S eco er			•	•				
C anide total						70 1 0	ass	
S eco er								
ea eta itered SA62	ea eta							
Aluminium filtered				117		0 120	ass	
Arsenic filtered				10		0 120	ass	
oron filtered				105		0 120	ass	
Cadmium filtered				111		0 120	ass	
Cobalt filtered				115		0 120	ass	
Copper filtered				107		0 120	ass	
ead filtered				112		0 120	ass	
an anese filtered				11		0 120	ass	
ic el filtered				110		0 120	ass	
Selenium filtered				112		0 120	ass	
inc filtered				10		0 120	ass	
Te t	ab Sam e	A Source	nit	eut1		Acce tance imit	a imit	uaiin ode
Sie ecoer				1				
Tota eco erab e drocarbon	1 N ra	ction		esult 1				
тсс	1 n1 00	С		111		70 1 0	ass	
T C10 C1	1 n1 27	С		7		70 1 0	ass	
Sie ecoer				1	I I	1		
onoc c ic Aromatic drocarbor	<u>ן</u>			esult 1				
en ene	1 n1 00	С		100		70 1 0	ass	
Eth Iben ene	1 n1 00	С		110		70 1 0	ass	
m p ehes	1 n1 00	С		117		70 1 0	ass	
o lene	1 n1 00	С		10		70 1 0	ass	
Toluene	1 n1 00	С		115		70 1 0	ass	
enes Total	1 n1 00	C		11		70 1 0	ass	
Sie ecoer				1	I I			
Tota eco erab e drocarbon	2 1 N ra	ction		esult 1				
T C C10	1 n1 00	C		111		70 1 0	ass	
T C10 C1	1 n1 27	C		0		70 1 0	ass	
Sie ecoer				001144				
C anida total	1 - 1 - 2	0				70.1.0		
			l	11		1 7010	888	
				Coult 1				
Aluminium filtered	1 n1 00	C		Coult I		75 125	360	
	1 n1 00			5		75 125	200	
oron filtered	1 n1 00			1		75 125	200	
Cadmium filtered	1 n1 00			0		75 125	200	
Cobalt filtered	1 n1 00			0		75 125	200	
	1 n1 00			0		75 125	200	
Copper milered				0		10120	ass	



Te t	ab Sam e	A Source	nit	eut1			Acce tance imit	a imit	ua i in ode
ead filtered	1 n1 00	С		7			75 125	ass	
an anese filtered	1 n1 212	С		5			75 125	ass	
ic el filtered	1 n1 00	С		2			75 125	ass	
Selenium filtered	1 n1 00	С		10			75 125	ass	
inc filtered	1 n1 00	С		2			75 125	ass	
Te t	ab Sam e	A Source	nit	e ut1			Acce tance imit	a imit	uaiin ode
u icate							r 1		
Tota eco erab e drocarbon	1 N ract	ion		esult 1	esult 2				
тсс	A1 n1 5	С	m /	0.02	0.02	1	0	ass	
T C10 C1	1 n1 1 1	С	m /	0.05	0.05	1	0	ass	
T C15 C2	1 n1 1 1	С	m /	0.1	0.1	1	0	ass	
T C2 C	1 n1 1 1	С	m /	0.1	0.1	1	0	ass	
u icate									
onoc c ic Aromatic drocarbon	1			esult 1	esult 2				
en ene	A1 n1 5	С	m /	0.001	0.001	1	0	ass	
Eth Iben ene	A1 n1 5	С	m /	0.001	0.001	1	0	ass	
Isoprop I ben ene Cumene	A1 n1 5	С	m /	0.001	0.001	1	0	ass	
m p ehes	A1 n1 5	С	m /	0.002	0.002	1	0	ass	
o lene	A1 n1 5	С	m /	0.001	0.001	1	0	ass	
St rene	A1 n1 5	С	m /	0.001	0.001	1	0	ass	
Toluene	A1 n1 5	С	m /	0.001	0.001	1	0	ass	
enes Total	A1 n1 5	С	m /	0.00	0.00	1	0	ass	
u icate									
Tota eco erab e drocarbon	2 1 N ract	ion		esult 1	esult 2				
aphthalene	A1 n1 5	С	m /	0.02	0.02	1	0	ass	
T C C10	A1 n1 5	С	m /	0.02	0.02	1	0	ass	
T C10 C1	1 n1 1 1	С	m /	0.05	0.05	1	0	ass	
T C1 C	1 n1 1 1	С	m /	0.1	0.1	1	0	ass	
ТССО	1 n1 1 1	С	m /	0.1	0.1	1	0	ass	
u icate									
				esult 1	esult 2				
C anide total	1 n1 2	С	m /	0.005	0.005	1	0	ass	
u icate							r 1		
ea eta i tered	ŕ			esult 1	esult 2				
Aluminium filtered	1 n1 00	С	m /	0.05	0.05	1	0	ass	
Arsenic filtered	1 n1 00	С	m /	0.01	0.017	7.0	0	ass	
oron filtered	1 n1 00	С	m /	0.0	0.0 0	.0	0	ass	
Cadmium filtered	1 n1 00	С	m /	0.0002	0.0002	1	0	ass	
Cobalt filtered	1 n1 00	С	m /	0.0012	0.0011	.0	0	ass	
Copper filtered	1 n1 00	С	m /	0.001	0.001	1	0	ass	
Iron filtered	1 n200 7	С	m /	17	1	5.0	0	ass	
ead filtered	1 n1 00	С	m /	0.001	0.001	1	0	ass	
an anese filtered	1 n1 00	С	m /	0.1	0.1	.0	0	ass	
ic el filtered	1 n1 00	С	m /	0.002	0.001	1	0	ass	
Selenium filtered	1 n1 00	С	m /	0.001	0.001	17	0	ass	
inc filtered	1 n1 00	С	m /	0.00 2	0.00 0	.0	0	ass	



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ode e cri tion

 2 is determined b arithmeticall subtractin the naphthalene alue from the C10 C1 alue. The naphthalene alue used in this calculation is obtained from olatiles

 01
 b e Trap anal sis .

 here we ha e reported both olatile T C S and semi olatile C S naphthalene data, results ma not be identical. ro ided correct sample handlin protocols ha e been followed, an obser ed differences in results are li el to be due to procedural differences within each methodolo . esults determined b both techni ues ha e passed

 02
 all A C acceptance criteria, and are entirel technicall alid.

1 is determined b arithmeticall subtracting the data and the answer of the concentrations of TE and tes. The C C10 alue is obtained b uantitating a ainst a standard of miled aromatic/aliphatic analities.

Aut ori ed

Adrian	Tabacchiera	Client Ser ices
Carroll	ee	Senior Anal st olatile IC
Emil	osenber	Senior Anal st etal IC
uon	e	Senior Anal st Inor anic IC
Stace	en ins	Senior Anal st Or anic IC

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Final report - this Report replaces any previously issued Report

Indicates ot e uested

Indicates ATA accreditation does not co er the performance of this ser ice

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Environmental Di	Group		
	CERTIFICAT	IE OF ANALYSIS	
Work Order	: EM1306677	Page	: 1 of 9
Client	ENVIRONMENTAL EARTH SCIENCES	Laboratory	Environmental Division Melbourne
Contact Address	: MIK REGIN ORQUIZA : P.O.BOX 2253	Contact Address	: Carol Walsh : 4 Westall Rd Springvale VIC Australia 3171
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l elephone Facsimile	: +61 03 96871866 : +61 03 96871844	rereprione Facsimile	: +61-3-6349 9608 : +61-3-8549 9601
Project	: 210074 Sth Melbourne Gasworks	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number			
C-O-C number		Date Samples Received	: 24-JUN-2013
Sampler	: SFL/KK	Issue Date	: 01-JUL-2013
Slie		No. of samples received	ō
Quote number	: ME/330/13	No. of samples analysed	ň. O.
This report superse release.	des any previous report(s) with this reference. Results apply to	the sample(s) as submitted.	All pages of this report have been checked and approved
This Certificate of And	alysis contains the following information:		
 General Corr Analytical Re 	nments ssults		
 Surrogate Cc 	ontrol Limits		

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Page Work Order	: 2 of 9 : EM1306677			
Client Project	ENVIRONMENTAL EARTH SC 210074 Sth Melbourne Gaswork	liences ks		(SIR)
General Com	ments			
The analytical proc developed procedure	cedures used by the Environmental is are employed in the absence of docum	Division have been developed from establishe nented standards or by client request.	ed internationally recognized procedures such as	those published by the USEPA, APHA, AS and NEPM. In house
Where moisture dete Where a reported les	rmination has been performed, results ar s than (<) result is higher than the LOR, t	re reported on a dry weight basis. this may be due to primary sample extract/digestate o	dilution and/or insufficient sample for analysis.	
Where the LOR of a	reported result differs from standard LOR	3, this may be due to high moisture content, insufficie.	strt sample (reduced weight employed) or matrix interfe	rence.
When sampling time	information is not provided by the client, :	sampling dates are shown without a time component	it. In these instances, the time component has been as	sumed by the laboratory for processing purposes.
Key : CAS LOR ^ = T	Number = CAS registry number from dat = Limit of reporting his result is computed from individual and	tabase maintained by Chemical Abstracts Services. T alyte detections at or above the level of reporting	The Chemical Abstracts Service is a division of the Am	erican Chemical Society.
EG020F: Result:	s for EM1306677-005 have been confirm	ned by re-preparation and re-analysis.		
EG020F: Zinc ar EK026E - EM13	rd copper results for EM1306677-001 ar	nd 002 have been confirmed by re-preparation and	t re-analysis.	
EK055G: Ammo	nia was analysed by buchi method for #	uue to possible sample interference. This has been #4 (EK055).	n communed by re-analysis.	
EM1306677-003,	, 004, 006 and 007: Ammonia as N resul	Its were done by buchi method (EK055).		
EP071SG: Partic	cular sample EM1306677-007 has LOR r	raised due to laboratory background.		
Ionic balances v	were calculated using: major anions - cl	Horide, alkalinity and sulfate; and major cations -	- calcium, magnesium, potassium, sodium and amm	onia for #2 , #4 and #6
Ionic balances v	vere calculated using: major anions - ch	hloride, alkalinity and sulfate; and major cations - (calcium, magnesium, potassium and sodium.	
	NATA Accredited Laboratory 825	Signatories This document has been electronically	y signed by the authorized signatories in	ndicated below. Electronic signing has been carried out in
NATA	Accredited for compliance with ISO/IEC 17025.	compliance with procedures specified in 21 signatories	CFR Part 11. Position	Accreditation Category
		Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
WORLD RECOGNISED				Melbourne Inorganics Melbourne Inorganics Melbourne Inorganics
		Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics Melbourne Organics
		Varsha Ho Wing	Non-Metals Team Leader	Melbourne Inorganics
		Xinchin I in	Senior Oraanic Chemist	Melbourne Organics

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Analytical Results

	GW42D
	GW43
	Client sample ID
ary ucar results	-Matrix: GROUNDWATER (Matrix: WATER)

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Clie	nt sample ID	GW43	GW42D	GW41	GW23	GW19
	CI	ent samplin	ng date / time	24-JUN-2013 15:00				
Compound	CAS Number	LOR	Unit	EM1306677-001	EM1306677-004	EM1306677-005	EM1306677-006	EM1306677-007
EA005: pH								
pH Value		0.01	pH Unit	5.82	5.76	6.90	6.83	6.12
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C		10	mg/L	18200	27000	4400	1120	2780
ED037P: Alkalinity by PC Titrator							-	
Total Alkalinity as CaCO3		-	mg/L	425	181	229	348	97
ED041G: Sulfate (Turbidimetric) as SO4 2-	- by DA						-	
Sulfate as SO4 - Turbidimetric	14808-79-8	ر	mg/L	1200	14400	503	411	1280
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	-	mg/L	9670	6190	2000	35	816
ED093F: Dissolved Major Cations				-	-	-	-	
Calcium	7440-70-2	-	mg/L	433	567	530	23	231
Magnesium	7439-95-4	~	mg/L	638	1060	221	ę	93
Sodium	7440-23-5	-	mg/L	4950	3530	530	29	264
Potassium	7440-09-7	-	mg/L	175	220	53	7	47
EG020F: Dissolved Metals by ICP-MS				-		-	-	
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.45	<0.01	0.02	0.04
Arsenic	7440-38-2	0.001	mg/L	0.003	0.016	0.030	0.554	2.06
Cadmium	7440-43-9	0.0001	mg/L	0.0007	0.0002	0.0006	<0.0001	0.0003
Cobalt	7440-48-4	0.001	mg/L	0.060	7.79	0.002	0.002	0.094
Copper	7440-50-8	0.001	mg/L	0.006	0.018	0.004	0.001	0.003
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	6.69	24.6	0.409	0.041	10.3
Nickel	7440-02-0	0.001	mg/L	0.062	2.22	0.013	0.002	0.040
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	0.048	0.143	0.024	0.012	0.025
Boron	7440-42-8	0.05	mg/L	0.99	0.28	0.84	1.57	1.51
Iron	7439-89-6	0.05	mg/L	0.26	13.3	0.18	3.72	255
EK026SF: Total CN by Segmented Flow A	Analyser							
Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.025	0.035	0.054	0.060
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.4	9.0	1.4	0.2	0.7
EK055G: Ammonia as N by Discrete Analy	yser							
Ammonia as N	7664-41-7	0.01	mg/L	1.33	2410	0.80	193	83.2

2age : 4 of 9	Nork Order : EM1306677	Client : ENVIRONMENTAL EARTH SCIENCES	Project · 210074 Sth Melbourne Gasworks	Page Nork Order Client Proiect	: 4 of 9 EM1306677 ENVIRONMENTAL EARTH SCIENCES 210074 Sth Melbourne Gasworks
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Sub-Matrix: GROUNDWATER (Matrix: WATER)		Clien	t sample ID	GW43	GW42D	GW41	GW23	GW19
	Cli	ənt sampling	1 date / time	24-JUN-2013 15:00				
Compound	CAS Number	LOR	Unit	EM1306677-001	EM1306677-004	EM1306677-005	EM1306677-006	EM1306677-007
EK055G-NH4: Ammonium as N by DA								
Ammonium as N		0.01	mg/L	1.33	2410	0.80	193	83.2
EK057G: Nitrite as N by Discrete Analyser							•	
Nitrite as N		0.01	mg/L	<0.01	<0.01	<0.01	0.04	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	1.12	<0.01
EK071G: Reactive Phosphorus as P by disd	crete analyser							
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.08	0.02	<0.01	<0.01	<0.01
EN055: Ionic Balance							•	
Total Anions		0.01	meq/L	306	478	71.5	16.5	51.6
Total Cations		0.01	meq/L	294		69.0		-
Total Cations	1	0.01	meq/L		446		16.5	52.0
Ionic Balance	1	0.01	%	2.07		1.70	0.10	
Ionic Balance		0.01	%		3.48			0.37
EP071 SG: Total Petroleum Hydrocarbons -	Silica gel clea	dnut					-	
C10 - C14 Fraction	-	50	hg/L		<50		170	06
C15 - C28 Fraction	-	100	hg/L		<100	-	480	320
C29 - C36 Fraction		50	hg/L		<50		<50	<60
C10 - C36 Fraction (sum)	-	50	hg/L		<50		650	410
EP071 SG: Total Recoverable Hydrocarbon	s (NEPM 2010	draft) - Sill	ica gel cleanu	a				
>C10 - C16 Fraction		100	hg/L		<100		290	270
>C16 - C34 Fraction		100	hg/L		<100		380	220
>C34 - C40 Fraction	1	100	hg/L		<100	-	<100	<100
C10 - C40 Fraction (sum)	-	100	hg/L		<100		670	490
EP074A: Monocyclic Aromatic Hydrocarbor	JS							
Benzene	71-43-2	1	hg/L	4	425	<1	61	<1
Toluene	108-88-3	2	hg/L	<2	38	<2	3	<2
Ethylbenzene	100-41-4	2	hg/L	<2	4	<2	52	-2
meta- & para-Xylene 108-	38-3 106-42-3	2	hg/L	<2	16	<2	З	<2
Styrene	100-42-5	5	hg/L	<5	<5	<5	<5	<5
ortho-Xylene	95-47-6	2	hg/L	<2	11	<2	12	<2
Isopropylbenzene	98-82-8	5	hg/L	<5	<5	<5	10	<5
n-Propylbenzene	103-65-1	5	hg/L	<5	<5	<5	<5	<5
1.3.5-Trimethylbenzene	108-67-8	5	hg/L	<5	<5	<5	<5	<5

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Sub-Matrix: GROUNDWATER (Matrix: WATER)		Clie	ent sample ID	GW43	GW42D	GW41	GW23	GW19
	Cli	ent samplii	ng date / time	24-JUN-2013 15:00				
Compound	CAS Number	LOR	Unit	EM1306677-001	EM1306677-004	EM1306677-005	EM1306677-006	EM1306677-007
EP074A: Monocyclic Aromatic Hydrocarb	ons - Continued							
sec-Butylbenzene	135-98-8	5	hg/L	<5	<5	<5	<5	<5
1.2.4-Trimethylbenzene	95-63-6	5	hg/L	<5	<5	<5	19	<5
tert-Butylbenzene	98-06-6	5	hg/L	<5	<5	<5	<5	<5
p-Isopropy Itoluene	99-87-6	5	hg/L	<5	<5	<5	<5	<5
n-Butylbenzene	104-51-8	5	hg/L	<5	<5	<5	<5	<5
EP074H: Naphthalene				-	-			
Naphthalene	91-20-3	7	hg/L	< <u> </u>	31	<7	<7	<7
EP080/071: Total Petroleum Hydrocarbons	IS				-			
C6 - C9 Fraction		20	hg/L	<20	480	<20	200	<20
C10 - C14 Fraction		50	hg/L	<50	760	<50	730	140
C15 - C28 Fraction		100	hg/L	<100	340	330	1020	1530
C29 - C36 Fraction		50	hg/L	<50	<50	<50	<50	<50
C10 - C36 Fraction (sum)		50	hg/L	<50	1100	330	1750	1670
EP080/071: Total Recoverable Hydrocarbd	ons - NEPM 201	0 Draft						
C6 - C10 Fraction	-	20	hg/L	<20	440	<20	260	<20
>C10 - C16 Fraction		100	hg/L	<100	670	250	780	650
>C16 - C34 Fraction		100	hg/L	<100	180	100	820	1130
>C34 - C40 Fraction		100	hg/L	<100	<100	<100	<100	<100
C10 - C40 Fraction (sum)		100	hg/L	<100	850	350	1600	1780
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	116	131	115	119	103
Toluene-D8	2037-26-5	0.1	%	110	107	108	118	111
4-Bromofluorobenzene	460-00-4	0.1	%	107	112	113	120	104
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	114	131	112	113	97.4
Toluene-D8	2037-26-5	0.1	%	105	104	105	103	97.3
4-Bromofluorobenzene	460-00-4	0.1	%	105	108	108	118	110

'age Vork Order Xient	: 6 of 9 : EM1306677 : ENVIRONMENTAL EARTH SCIENCES
Vork Order	EM1306677
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nalytical Results					
ib-Matrix: WATER (Matrix: WATER)		Clie	int sample ID	DUP1	 GW39
	Ũ	ient samplii	ng date / time	24-JUN-2013 15:00	24-JUN-2013 15:00
punoamo	CAS Number	LOR	Unit	EM1306677-002	EM1306677-003
A005: pH					
oH Value		0.01	pH Unit		6.67
A015: Total Dissolved Solids					
Total Dissolved Solids @180°C		10	mg/L		2660
D037P: Alkalinity by PC Titrator					
otal Alkalinity as CaCO3		~	mg/L		362
0041G: Sulfate (Turbidimetric) as SC	04 2- by DA				
ulfate as SO4 - Turbidimetric	14808-79-8	-	mg/L	1210	1570
0045G: Chloride Discrete analyser					
hloride	16887-00-6	4	mg/L		43
093F: Dissolved Major Cations					
alcium	7440-70-2	-	mg/L		226
agnesium	7439-95-4	-	mg/L		77
bdium	7440-23-5	-	mg/L		60
otassium	7440-09-7	٦	mg/L		16
3020F: Dissolved Metals by ICP-MS					
uminium	7429-90-5	0.01	mg/L	<0.01	<0.01
rsenic	7440-38-2	0.001	mg/L	<0.001	0.682
admium	7440-43-9	0.0001	mg/L	0.0009	0.0004
obalt	7440-48-4	0.001	mg/L	0.064	0.044
opper	7440-50-8	0.001	mg/L	0.022	0.004
ead	7439-92-1	0.001	mg/L	0.002	<0.001
anganese	7439-96-5	0.001	mg/L	7.00	3.82
ickel	7440-02-0	0.001	mg/L	0.072	0.059
elenium	7782-49-2	0.01	mg/L	<0.01	<0.01
inc	7440-66-6	0.005	mg/L	0.110	0.032
oron	7440-42-8	0.05	mg/L	1.08	1.57
uo	7439-89-6	0.05	mg/L	0.24	67.8
(026SF: Total CN by Segmented Flo	ow Analyser				
otal Cyanide	57-12-5	0.004	mg/L	<0.004	0.116
(040P: Fluoride by PC Titrator					
uoride	16984-48-8	0.1	mg/L		1.7

24-JUN-2013 15:00 EM1306677-009 Trip 1 l l l 5:00 80

mg/L

16984-48-8 0.1

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290

1.39

mg/L

0.01

7664-41-7

EK055G: Ammonia as N by Discrete Analyser Ammonia as N

: 7 of 9	: EM1306677	ENVIRONMENTAL EARTH SCIENCES	210074 Sth Melbourne Gasworks
Page	Work Order	Client	Project



Analytical Results							
Sub-Matrix: WATER (Matrix: WATER)	0	lient sample ID	DUP1	GW39	Rinsate 1	Trip 1	
	Client sam	oling date / time	24-JUN-2013 15:00	24-JUN-2013 15:00	24-JUN-2013 15:00	24-JUN-2013 15:00	1
Compound CAS Nu.	nber LOR	Unit	EM1306677-002	EM1306677-003	EM1306677-008	EM1306677-009	
EK055G-NH4: Ammonium as N by DA							
Ammonium as N	0.01	mg/L		290		1	
EK057G: Nitrite as N by Discrete Analyser							
Nitrite as N	0.01	mg/L		0.04			
EK058G: Nitrate as N by Discrete Analyser							
Nitrate as N 14797	-55-8 0.01	mg/L		0.08		1	
EK071G: Reactive Phosphorus as P by discrete and	ılyser						
Reactive Phosphorus as P 14265	44-2 0.01	mg/L		<0.01		1	
EN055: Ionic Balance							
Total Anions	0.01	meq/L		41.1			
Total Cations	0.01	meq/L		45.0			
Ionic Balance	0.01	%		4.43			
EP071 SG: Total Petroleum Hydrocarbons - Silica g	el cleanup						
C10 - C14 Fraction	50	µg/L		190			
C15 - C28 Fraction	100	hg/L		130			
C29 - C36 Fraction	50	hg/L		<50			-
C10 - C36 Fraction (sum)	50	hg/L		320		1	
EP071 SG: Total Recoverable Hydrocarbons (NEPM	l 2010 draft) -	Silica gel clean	dr				
>C10 - C16 Fraction	100	hg/L		310		-	-
>C16 - C34 Fraction	100	hg/L		<100		-	-
>C34 - C40 Fraction	100	hg/L		<100		I	-
C10 - C40 Fraction (sum)	100	hg/L		310		-	-
EP074A: Monocyclic Aromatic Hydrocarbons							
Benzene 71.	43-2 1	hg/L	^	72	4	~	
Toluene 108	-88-3 2	hg/L	<2	7	<2	<2	-
Ethylbenzene 100	41-4 2	hg/L	<2	4	<2	<2	
meta- & para-Xylene 108-38-3 106	42-3 2	hg/L	<2	7	<2	<2	
Styrene 100	42-5 5	hg/L	<5	<5	<5	<5	
ortho-Xylene 95	47-6 2	hg/L	<2	9	<2	<2	
Isopropylbenzene 98	-82-8 5	hg/L	<5	<5	<5	<5	
n-Propylbenzene 103	-65-1 5	hg/L	<5	<5	<5	<5	
1.3.5-Trimethylbenzene 108	-67-8 5	hg/L	<5	<5	<5	<5	-
sec-Butylbenzene 135	-98-8 5	hg/L	<5	<5	<5	<5	-
1.2.4-Trimethylbenzene 95	-63-6 5	µg/L	<5	្ខុ	<5 <5	<5	I

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Vork Order	: EM1306677
Client	ENVIRONMENTAL EARTH SCIENCES
Project	210074 Sth Melbourne Gasworks



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Sub-Matrix: WATER (Matrix: WATER)		Client s	ample ID	DUP1	GW39	Rinsate 1	Trip 1		
	Client s	sampling di	ate / time	24-JUN-2013 15:00	24-JUN-2013 15:00	24-JUN-2013 15:00	24-JUN-2013 15:00		
Compound CAS Nui	mber L(OR	Unit	EM1306677-002	EM1306677-003	EM1306677-008	EM1306677-009	1	
EP074A: Monocyclic Aromatic Hydrocarbons - Cont	inued								
tert-Butylbenzene 98-	-06-6	5	hg/L	<5	<5	<5	<5		
p-lsopropyltoluene 99-	-87-6	5	hg/L	<5	<5	<5	<5		
n-Butylbenzene 104-	-51-8	5	hg/L	<5	<5	<5	<5		
EP074H: Naphthalene	-								
Naphthalene 91-	-20-3	7	hg/L	<7	19	<7	<7		
EP080/071: Total Petroleum Hydrocarbons	-	-			-				
C6 - C9 Fraction		20	hg/L	<20	100	<20			
C10 - C14 Fraction		00	hg/L	<50	500	<50			
C15 - C28 Fraction	1	00	hg/L	<100	1570	<100			
C29 - C36 Fraction		20	hg/L	<50	<50	<50			
C10 - C36 Fraction (sum)		20	hg/L	<50	2070	<50			
EP080/071: Total Recoverable Hydrocarbons - NEPI	M 2010 Dr	raft					-		
C6 - C10 Fraction		20	hg/L	<20	110	<20			
>C10 - C16 Fraction		00	hg/L	<100	940	<100			
>C16 - C34 Fraction	1	00	hg/L	<100	1220	<100			
>C34 - C40 Fraction	1	00	hg/L	<100	<100	<100			
>C10 - C40 Fraction (sum)	1	00	hg/L	<100	2160	<100			
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4 17060-	-02-0	.1	%	110	126	102	103		
Toluene-D8 2037-	-26-5 0	.1	%	103	123	96.6	96.4		
460-460	-00-4 0	.1	%	106	126	94.0	101		
EP080S: TPH(V)/BTEX Surrogates	-								
1.2-Dichloroethane-D4 17060-	-02-0	.1	%	106	119	99.7			
Toluene-D8 2037-	-26-5 0	.1	%	99.3	107	93.7			
4-Bromofluorobenzene 460-	-00-4 0	.1	%	106	125	92.1			

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Project

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Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery	Limits (%)
Compound	CAS Number	Том	High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	69	133
Toluene-D8	2037-26-5	72	128
4-Bromofluorobenzene	460-00-4	70	130
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	70	132
Toluene-D8	2037-26-5	69	125
4-Bromofluorobenzene	460-00-4	61	129
Sub-Matrix: WATER		Recovery	Limits (%)
Compound	CAS Number	Гом	High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	69	133
Toluene-D8	2037-26-5	72	128
4-Bromofluorobenzene	460-00-4	70	130
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	70	132
Toluene-D8	2037-26-5	69	125
4-Bromofluorobenzene	460-00-4	61	129



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QUALITY CONTROL REPORT

: 1 of 11	: Environmental Division Melbourne : Carol Walsh : 4 Westall Rd Springvale VIC Australia 3171	: carol.walsh@alsglobal.com : +61-3-8549 9608 : +61-3-8549 9601	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement	: 24-JUN-2013 : 01-JUL-2013	ი. ი	
Page	Laboratory Contact Address	E-mail Telephone Facsimile	QC Level	Date Samples Received Issue Date	No. of samples received No. of samples analysed	
: EM1306677	: ENVIRONMENTAL EARTH SCIENCES : MR REGIN ORQUIZA : P.O.BOX 2253 FOOTSCRAY VIC, AUSTRALIA 3011	: rorquiza@environmentalearthsciences.com : +61 03 96871666 : +61 03 96871844	: 210074 Sth Melbourne Gasworks	: : SFL/KK	: : ME/330/13	the second second second state the second
Work Order	Client Contact Address	E-mail Telephone Facsimile	Project Site	C-O-C number Sampler	Order number Quote number	This are at

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
 - Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
 - Metrico Diality (MD) Broad: Browning Outling Spike (ECO) (Neboil, (Neboild) and Ac
 - Matrix Spike (MS) Report; Recovery and Acceptance Limits

Address 4 Westall Rd Springvale VIC Australia 3171 | PHONE +61-3-8549 9601 | Facsimile +61-3-8549 9601 Environmental Division Melbourne ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company www.alsglobal.com

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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.

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

RPD = Relative Percentage Difference

= Indicates failed QC

<i>ignatories</i> his document has rocedures specified <i>ignatories</i> ilani Fernando ilani Pernando arsha Ho Wing arsha Ho Wing indbin Lin	s been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with in 21 CFR Part 11.	Position Accreditation Category	Senior Inorganic Chemist Melbourne Inorganics Melbourne Inorganics Melbourne Inorganics	Senior Semivolatile Instrument Melbourne Organics Chemist Melbourne Organics	Non-Metals Team Leader Melbourne Inorganics	Senior Organic Chemist Melbourne Organics
$O \vdash \sigma \circ \mid \sigma \qquad z > x$	Signatories This document has been procedures specified in 21 CF	Signatories	Dilani Fernando	Nancy Wang	Varsha Ho Wing	Xingbin Lin

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- : ENVIRONMENTAL EARTH SCIENCES
- - : 210074 Sth Melbourne Gasworks

Project



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%.

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Sub-Matrix: WATER	Cliant cample 10		CAS Mumber		IInit	Cristing Docute	Duplicate (DUP) Report		Docurrent I imite (0/)
EA005: pH (QC Lot:	2936555)	Interriod. Compound						601 -	
EM1306663-001	Anonymous	EA005: pH Value		0.01	pH Unit	7.96	7.94	0.2	0% - 20%
EM1306685-001	Anonymous	EA005: pH Value		0.01	pH Unit	6.72	6.73	0.1	0% - 20%
EA015: Total Dissol	ved Solids (QC Lot: 2935788	8)							
EM1306657-001	Anonymous	EA015H: Total Dissolved Solids @180°C		10	mg/L	46200	46300	0.1	0% - 20%
EM1306657-010	Anonymous	EA015H: Total Dissolved Solids @180°C		10	mg/L	23400	23400	0.0	0% - 20%
ED037P: Alkalinity b	y PC Titrator (QC Lot: 2936	332)							
EM1306539-001	Anonymous	ED037-P: Total Alkalinity as CaCO3		-	mg/L	29	30	0.0	0% - 20%
EM1306653-001	Anonymous	ED037-P: Total Alkalinity as CaCO3		1	mg/L	912	906	0.6	0% - 20%
ED041G: Sulfate (Tu	rbidimetric) as SO4 2- by DA	A (QC Lot: 2936017)							
EM1306677-001	GW43	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1200	1220	0.9	0% - 20%
EM1306704-006	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	-	mg/L	158	159	0.0	0% - 20%
ED045G: Chloride D	iscrete analyser (QC Lot: 29	936015)							
EM1306677-001	GW43	ED045G: Chloride	16887-00-6	-	mg/L	9670	9830	1.7	0% - 20%
EM1306718-002	Anonymous	ED045G: Chloride	16887-00-6	-	mg/L	2990	3070	2.6	0% - 20%
ED093F: Dissolved	Major Cations(QC Lot: 2936	s011)							
EM1306677-001	GW43	ED093F: Calcium	7440-70-2	-	mg/L	433	460	6.0	0% - 20%
		ED093F: Magnesium	7439-95-4	-	mg/L	638	674	5.5	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	4950	5170	4.4	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	175	184	5.2	0% - 50%
EM1306718-002	Anonymous	ED093F: Calcium	7440-70-2	-	mg/L	23	23	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	-	mg/L	306	300	1.7	0% - 20%
		ED093F: Sodium	7440-23-5	-	mg/L	1150	1160	0.5	0% - 20%
		ED093F: Potassium	7440-09-7	۲	mg/L	20	19	0.0	0% - 50%
EG020F: Dissolved	Metals by ICP-MS (QC Lot: 2	2936508)							
EM1306623-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.009	0.008	14.9	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.024	0.022	5.7	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.024	0.027	11.6	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.015	0.014	7.5	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.032	0.031	4.9	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	0.01	<0.01	0.0	No Limit
	[EG020A-F: Boron	7440-42-8	0.05	mg/L	1.47	1.69	13.9	0% - 20%

Client Project	210074 Sth Melbourne	Gasworks							ALS
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 I	Metals by ICP-MS (QC Lo	t: 2936508) - continued							
EM1306623-001	Anonymous	EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EM1306677-007	GW19	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0003	0.0003	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	2.06	2.07	0.4	0% - 20%
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	0.094	0.089	5.0	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.003	0.003	0:0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0:0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	10.3	10.8	4.3	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.040	0.037	9.2	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.025	0.025	0.0	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.04	0.05	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Boron	7440-42-8	0.05	mg/L	1.51	1.63	7.2	0% - 20%
		EG020A-F: Iron	7439-89-6	0.05	mg/L	255	308	18.6	0% - 20%
EK026SF: Total CN	by Segmented Flow Anal	yser (QC Lot: 2936566)							
EM1306677-001	GW43	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0:0	No Limit
EM1306716-003	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.0	No Limit
EK040P: Fluoride by	PC Titrator (QC Lot: 29)	36333)							
EM1306539-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	0.1	0:0	No Limit
EM1306638-008	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.4	0.4	0.0	No Limit
EK055G: Ammonia a	as N by Discrete Analyse	r (QC Lot: 2936860)							
EM1306677-001	GW43	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	1.33	1.39	4.4	0% - 20%
EM1306716-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.08	0.08	0.0	No Limit
EK057G: Nitrite as N	V by Discrete Analyser (2C Lot: 2936012)							
EM1306677-001	GW43	EK057G: Nitrite as N		0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM1306718-002	Anonymous	EK057G: Nitrite as N		0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK071G: Reactive P	hosphorus as P by discre	ete analyser (QC Lot: 2936013)							
EM1306677-001	GW43	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.08	0.08	0.0	No Limit
EP071 SG: Total Pet	roleum Hydrocarbons - S	illica gel cleanup (QC Lot: 2935863)							
EM1306677-003	GW39	EP071SG: C15 - C28 Fraction		100	hg/L	130	<100	23.3	No Limit
		EP071SG: C10 - C14 Fraction		50	hg/L	190	<50	118	No Limit
		EP071SG: C29 - C36 Fraction		50	hg/L	<50	<50	0.0	No Limit
		EP071SG: C10 - C36 Fraction (sum)		50	hg/L	320	<50	146	No Limit
EP071 SG: Total Red	coverable Hydrocarbons	(NEPM 2010 draft) - Silica gel cleanup (QC Lot: 29358	363)						
EM1306677-003	GW39	EP071SG: >C10 - C16 Fraction		100	hg/L	310	<100	102	No Limit
		EP071SG: >C16 - C34 Fraction		100	hg/L	<100	<100	0.0	No Limit
		EP071SG: >C34 - C40 Fraction		100	hg/L	<100	<100	0:0	No Limit
EP074A: Monocyclid	: Aromatic Hydrocarbons	(QC Lot: 2935893)							
EM1306677-001	GW43	EP074: Benzene	71-43-2	-	hg/L	Ŷ	۲ ۲	0:0	No Limit
		EP074: Toluene	108-88-3	2	hg/L	<2	<2	0.0	No Limit

Page Work Order	: 5 of 11 : EM1306677								-
Client	ENVIRONMENTAL EARTH	4 SCIENCES							
Project	: 210074 Sth Melbourne Gas	sworks							(ALS)
Sub-Matrix: WATER						Laboratory Du	iplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclid	c Aromatic Hydrocarbons (Q	2C Lot: 2935893) - continued							
EM1306677-001	GW43	EP074: Ethylbenzene	100-41-4	2	hg/L	<2	<2	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3	2	hg/L	2	<2	0.0	No Limit
		ED071: ortho - Xulana	100-42-3 95-47-6	~	110/1	Ŷ	¢	00	No Limit
		ET 074. Styrene FD074. Styrene	100-42-5	1 10	ua/L	i rč	i N	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	hg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	hg/L	<5	√2	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	hg/L	~ 2 ≺2	<2 <2	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	S	hg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	hg/L	<5	<5	0.0	No Limit
		EP074: p-lsopropyltoluene	99-87-6	5	hg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	hg/L	<5	<5	0.0	No Limit
EM1306685-002	Anonymous	EP074: Benzene	71-43-2	~	hg/L	Ý	Ŷ	0.0	No Limit
		EP074: Toluene	108-88-3	2	hg/L	42	42	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	2	hg/L	42	42	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3	2	hg/L	42	<2	0.0	No Limit
			106-42-3	c	1/~	ç	ç	c	No Limit
		EPU/4: Ortno-Xylene	D-14-00	N 1	hg/L	y i	y i	0.0	
		EP074: Styrene	G-24-001	n u	µg/∟ /I	ŝ	Ω Υ	0.0	No Limit
			00-00-00-00-00-00-00-00-00-00-00-00-00-	о и	р9/Г	р и 1	2 4		
		EP0/4: n-Propylbenzene ED071-1-2 E Trimothulhonzono	108-67-8	ה ע	hg/L	с, ц / V	с У У		No Limit
			135-98-8	о и	10/1	ç v	ç v		No Limit
		ED074-1-2-4-Trimethylhenzene	95-63-6	о IC.		ò S	ò rc	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	ى ە	hg/L	 25 	< 2 2	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	S	hg/L	<2 <2	ې ۲	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	2	hg/L	<5	<5	0.0	No Limit
EP074H: Naphthaler	ne (QC Lot: 2935893)								
EM1306677-001	GW43	EP074: Naphthalene	91-20-3	7	hg/L	<7	<7	0.0	No Limit
EM1306685-002	Anonymous	EP074: Naphthalene	91-20-3	7	hg/L	<7	<7	0.0	No Limit
EP080/071: Total Pe	troleum Hydrocarbons (QC I	Lot: 2935862)							
EM1306677-001	GW43	EP071: C15 - C28 Fraction	-	100	hg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction		50	hg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction		50	hg/L	<50	<50	0.0	No Limit
EM1306677-005	GW41	EP071: C15 - C28 Fraction	1	100	hg/L	330	300	7.5	No Limit
		EP071: C10 - C14 Fraction	1	50	hg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	1	50	hg/L	<50	<50	0.0	No Limit
EP080/071: Total Pe	troleum Hydrocarbons (QC I	Lot: 2935894)							
EM1306677-001	GW43	EP080: C6 - C9 Fraction		20	hg/L	<20	<20	0.0	No Limit

		D (%) Recovery Limits (%)		0.0 No Limit		0.0 No Limit	0.0 No Limit).0 No Limit	2.1 No Limit	0.0 No Limit	0.0 No Limit		0.0 No Limit	0.0 No Limit
	uplicate (DUP) Report	Duplicate Result RPI		<20 0		<100 0	<100 0	<100 0	220 11	100	<100 0		<20 0	<20 0
	Laboratory D	Original Result		<20		<100	<100	<100	250	100	<100		<20	<20
		Unit		hg/L		hg/L	hg/L	hg/L	hg/L	hg/L	hg/L		hg/L	hg/L
		LOR		20		100	100	100	100	100	100		20	20
		CAS Number				1							-	
H SCIENCES asworks		Method: Compound	: Lot: 2935894) - continued	EP080: C6 - C9 Fraction	NEPM 2010 Draft (QC Lot: 2935862)	EP071: >C10 - C16 Fraction	EP071: >C16 - C34 Fraction	EP071: >C34 - C40 Fraction	EP071: >C10 - C16 Fraction	EP071: >C16 - C34 Fraction	EP071: >C34 - C40 Fraction	NEPM 2010 Draft (QC Lot: 2935894)	EP080: C6 - C10 Fraction	EP080: C6 - C10 Fraction
: 6 of 11 : EM1306677 : ENVIRONMENTAL EART : 210074 Sth Melbourne Ga		Client sample ID	troleum Hydrocarbons (QC	Anonymous	coverable Hydrocarbons - N	GW43			GW41			coverable Hydrocarbons - N	GW43	Anonymous
Page Work Order Client Project	Sub-Matrix: WATER	Laboratory sample ID	EP080/071: Total Pe	EM1306685-002	EP080/071: Total Re	EM1306677-001			EM1306677-005			EP080/071: Total Re	EM1306677-001	EM1306685-002

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Work Order	EM1306677
Client	ENVIRONMENTAL EARTH SCIENCES
Project	: 210074 Sth Melbourne Gasworks



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

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

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Sub-Matrix: WATER				Method Blank (MB)		Laboratory Control Spike (LC	S) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	7CS	Гом	High
EA015: Total Dissolved Solids (QCLot: 2935788)								
EA015H: Total Dissolved Solids @180°C		10	mg/L	<10	2000 mg/L	99.6	98	104
ED037P: Alkalinity by PC Titrator (QCLot: 2936332)								
ED037-P: Total Alkalinity as CaCO3	-	£	mg/L	-	200 mg/L	97.4	91	105
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot:	: 2936017)							
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	Ł	mg/L	4	12.5 mg/L	104	81	125
ED045G: Chloride Discrete analyser (QCLot: 2936015)								
ED045G: Chloride	16887-00-6	-	mg/L	٨	10 mg/L	105	89	117
ED093F: Dissolved Major Cations (QCLot: 2936011)								
ED093F: Calcium	7440-70-2	Ł	mg/L	4	5 mg/L	97.0	83	129
ED093F: Magnesium	7439-95-4	-	mg/L	۲ ۲	5 mg/L	94.4	80	124
ED093F: Sodium	7440-23-5	£	mg/L	Ŷ	50 mg/L	92.9	77	125
ED093F: Potassium	7440-09-7	Ł	mg/L	4	50 mg/L	92.3	77	123
EG020F: Dissolved Metals by ICP-MS (QCLot: 2936508)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	101	06	110
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	93	109
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	99.9	85	111
EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	97.7	87	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.0	86	110
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	103	88	112
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	106	86	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	98.6	86	112
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	96.0	85	111
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.2	83	113
EG020A-F: Boron	7440-42-8	0.05	mg/L	<0.05	0.1 mg/L	101	72	126
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	101	88	112
EK026SF: Total CN by Segmented Flow Analyser (QCLo	t: 2936566)							
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	105	75	113
EK040P: Fluoride by PC Titrator (QCLot: 2936333)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	105	78	120
EK055G: Ammonia as N by Discrete Analyser (QCLot: 29	36860)							
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1.0 mg/L	104	76	122
EK057G: Nitrite as N by Discrete Analyser (QCLot: 29360	112)							
EK057G: Nitrite as N	1	0.01	mg/L	<0.01	0.5 mg/L	99.8	84	112

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Page Work Order Client Project	 8 of 11 EM1306677 ENVIRONMENTAL EARTH SCIENCE 210074 Sth Melbourne Gasworks 	ល្អ							
Sub-Matrix: WATER					Method Blank (MB) Report	Snike	Laboratory Control Spike (LC: Snike Recovery (%)	S) Report Recovery I	imits (%)
Mothod' Compound		CAS Number	LOR	Unit	Result	Concentration	TCS	Tow	Hiah
EK071G: Reactive Pho	osphorus as P by discrete analyser	(QCLot: 293601;	3)						
EK071G: Reactive Phosp	horus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	107	84	108
EP071 SG: Total Petro	leum Hydrocarbons - Silica gel clea	nup (QCLot: 29	35863)					-	
EP071SG: C10 - C14 Fra	ction		50	hg/L	<50	62700 µg/L	102	58	144
EP071SG: C15 - C28 Fra	ction		100	hg/L	<100	101500 µg/L	96.9	55	133
EP071SG: C29 - C36 Fra	ction		50	hg/L	<50				
EP071SG: C10 - C36 Frai	ction (sum)		50	hg/L	<50				
EP071 SG: Total Reco	verable Hydrocarbons (NEPM 2010	draft) - Silica gel	cleanup (QCLot:	: 2935863)					
EP071SG: >C10 - C16 Fr	action		100	hg/L	<100				
EP071SG: >C16 - C34 Fr	action		100	hg/L	<100				
EP071SG: >C34 - C40 Fr	action		100	hg/L	<100				
EP074A: Monocyclic A	Aromatic Hydrocarbons (QCLot: 293	35893)							
EP074: Benzene		71-43-2	-	hg/L	₽	20 µg/L	91.4	76	122
EP074: Toluene		108-88-3	2	hg/L	<2	20 µg/L	92.1	79	123
EP074: Ethylbenzene		100-41-4	2	hg/L	2	20 µg/L	91.6	76	118
EP074: meta- & para-Xyle	ane	108-38-3	2	hg/L	<2	40 µg/L	93.4	75	121
ED074. Styrana		100-42-5	2J	na/L	<25	20 ua/L	0.76	72	118
EP074: ortho-Xvlene		95-47-6	7	hg/L	4	20 µg/L	97.4	80	120
EP074: Isopropylbenzene		98-82-8	S	hg/L	<2	20 µg/L	99.1	71	119
EP074: n-Propylbenzene		103-65-1	5	hg/L	<5	20 µg/L	85.0	69	113
EP074: 1.3.5-Trimethylbe	nzene	108-67-8	5	hg/L	<2	20 µg/L	86.4	70	114
EP074: sec-Butylbenzene		135-98-8	Q	hg/L	~ 5 ≺5	20 µg/L	84.8	71	115
EP074: 1.2.4-Trimethylbe	nzene	95-63-6	5	hg/L	<2	20 µg/L	87.3	70	114
EP074: tert-Butylbenzene		98-06-6	S	hg/L	~2	20 µg/L	86.3	72	114
EP074: p-lsopropyltoluené	0	99-87-6	5	hg/L	<2	20 µg/L	85.1	68	114
EP074: n-Butylbenzene		104-51-8	5	hg/L	<5	20 µg/L	84.7	61	115
EP074H: Naphthalene	(QCLot: 2935893)								
EP074: Naphthalene		91-20-3	7	hg/L	<7	20 µg/L	96.6	75	121
EP080/071: Total Petro	pleum Hydrocarbons(QCLot: 29358	(62)							
EP071: C10 - C14 Fractio	ç		50	hg/L	<50	3610 µg/L	91.4	46	126
EP071: C15 - C28 Fractio	Ę	-	100	hg/L	<100	10340 µg/L	96.6	55	125
EP071: C29 - C36 Fractio	Ľ.		50	hg/L	<50	3790 µg/L	99.1	55	129
EP080/071: Total Petro	pleum Hydrocarbons(QCLot: 29358	(94)							
EP080: C6 - C9 Fraction			20	hg/L	<20	360 µg/L	98.1	60	126
EP080/071: Total Reco	verable Hydrocarbons - NEPM 2010	Draft (QCLot: 2	2935862)						
EP071: >C10 - C16 Fracti	ion		100	hg/L	<100	5070 µg/L	97.7	53	129
EP071: >C16 - C34 Fracti	ion		100	hg/L	<100	11230 µg/L	103	56	132
EP071: >C34 - C40 Fracti	ion	1	100	hg/L	<100	1010 µg/L	97.9	51	137

	577	NMENTAL EARTH SCIENCES	th Melbourne Gasworks
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EP080: C6 - C10 Fraction 20 µg/L <20 450 µg/L 94.8 56 130

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				Mai	trix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery L	imits (%)
Laboratory sample ID Clier	nt sample ID	Method: Compound	CAS Number	Concentration	SM	мот	High
ED041G: Sulfate (Turbid	imetric) as SO4 2- by DA(QCLot: 2936017)						
EM1306677-003 GW3:	0	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not	20	130
					Determined		
ED045G: Chloride Discre	ete analyser(QCLot: 2936015)						
EM1306677-003 GW3	6	ED045G: Chloride	16887-00-6	400 mg/L	112	70	130
EG020F: Dissolved Meta	ils by ICP-MS(QCLot: 2936508)						
EM1306623-001 Anon	snous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	110	89	139
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	102	75	131
		EG020A-F: Cobalt	7440-48-4	0.2 mg/L	110	77	129
		EG020A-F: Copper	7440-50-8	0.2 mg/L	114	71	127
		EG020A-F: Lead	7439-92-1	0.2 mg/L	114	71	123
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	100	66	132
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	103	73	129
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	111	68	136
EK026SF: Total CN by S	Segmented Flow Analyser(QCLot: 2936566)						
EM1306677-002 DUP	7	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	# 56.1	70	130
EK040P: Fluoride by PC	Titrator (QCLot: 2936333)						
EM1306539-002 Anon	hmous	EK040P: Fluoride	16984-48-8	5.0 mg/L	107	70	130
EK055G: Ammonia as N	by Discrete Analyser (QCLot: 2936860)						
EM1306677-002 DUP	7	EK055G: Ammonia as N	7664-41-7	1.0 mg/L	118	70	130
EK057G: Nitrite as N by	Discrete Analyser (QCLot: 2936012)						
EM1306677-003 GW3:	0	EK057G: Nitrite as N		0.5 mg/L	96.2	70	130
EK071G: Reactive Phos	phorus as P by discrete analyser(QCLot: 2936013						
EM1306677-003 GW3	6	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	94.7	70	130
EP071 SG: Total Petrole	um Hydrocarbons - Silica gel cleanup (QCLot: 293	5863)					
EM1306677-004 GW4.	2D	EP071SG: C10 - C14 Fraction		62700 µg/L	128	65	149
		EP071SG: C15 - C28 Fraction		101500 µg/L	120	56	148

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Sub-Matrix: WATER			W	atrix Spike (MS) Report		
			Spike	SpikeRecovery(%)	Recovery L	imits (%)
Laboratory sample ID Client sample ID	Method: Compound	CAS Number	Concentration	SW	том	High
EP074A: Monocyclic Aromatic Hydrocarbons (QC	CLot: 2935893)					
EM1306677-002 DUP1	EP074: Benzene	71-43-2	20 µg/L	94.4	64	121
	EP074: Toluene	108-88-3	20 µg/L	100	63	125
EP080/071: Total Petroleum Hydrocarbons(QCLc	ot: 2935862)					
EM1306677-002 DUP1	EP071: C10 - C14 Fraction		3610 µg/L	7.77	40	130
	EP071: C15 - C28 Fraction		10340 µg/L	82.7	51	145
	EP071: C29 - C36 Fraction		3790 µg/L	85.6	52	144
EP080/071: Total Petroleum Hydrocarbons(QCLc	ot: 2935894)					
EM1306677-002 DUP1	EP080: C6 - C9 Fraction		280 µg/L	77.6	46	126
EP080/071: Total Recoverable Hydrocarbons - NE	EPM 2010 Draft (QCLot: 2935862)					
EM1306677-002 DUP1	EP071: >C10 - C16 Fraction		5070 µg/L	82.9	46	142
	EP071: >C16 - C34 Fraction		11230 µg/L	88.4	52	146
	EP071: >C34 - C40 Fraction		1010 µg/L	87.6	49	143
EP080/071: Total Recoverable Hydrocarbons - NE	EPM 2010 Draft (QCLot: 2935894)					
EM1306677-002 DUP1	EP080: C6 - C10 Fraction		330 µg/L	76.0	45	127

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

9 The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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 (M.	S) and Matrix Spii	ke Duplicate ((MSD) Report		
				Spike	Spike Reco	overy (%)	Recovery L	imits (%)	RPDs	(%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	SM	USD	Low	High	Value	Control Limit
EP080/071: Total Pe	troleum Hydrocarbons(QCLot: 2935862)									
EM1306677-002	DUP1	EP071: C10 - C14 Fraction	-	3610 µg/L	7.77		40	130	-	-
		EP071: C15 - C28 Fraction		10340 µg/L	82.7		51	145		-
		EP071: C29 - C36 Fraction		3790 µg/L	85.6		52	144	-	
EP080/071: Total Re	coverable Hydrocarbons - NEPM 2010 Dr	aft (QCLot: 2935862)								
EM1306677-002	DUP1	EP071: >C10 - C16 Fraction		5070 µg/L	82.9		46	142		
		EP071: >C16 - C34 Fraction		11230 µg/L	88.4		52	146		
		EP071: >C34 - C40 Fraction	-	1010 µg/L	87.6		49	143		
EP071 SG: Total Pet	troleum Hydrocarbons - Silica gel cleanup	p (QCLot: 2935863)								
EM1306677-004	GW42D	EP071SG: C10 - C14 Fraction		62700 µg/L	128		65	149		
		EP071SG: C15 - C28 Fraction		101500 µg/L	120		56	148		
EP074A: Monocyclid	c Aromatic Hydrocarbons (QCLot: 29358	93)								
EM1306677-002	DUP1	EP074: Benzene	71-43-2	20 µg/L	94.4		64	121		
		EP074: Toluene	108-88-3	20 µg/L	100		63	125		
ED080/074. Total Do	troloum Hydrocarbons (OCL of: 2935894)									

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Sub-Matrix: WATER				Matrix Spike (M	S) and Matrix Spi	ke Duplicate (MSD) Report		
			Spike	Spike Rec	overy (%)	Recovery I	imits (%)	RPD;	s (%)
Laboratory sample ID Client sample ID	Method: Compound	CAS Number	Concentration	SW	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 29358	94) - continued								
EM1306677-002 DUP1	EP080: C6 - C9 Fraction		280 µg/L	77.6		46	126	1	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010	Draft (QCLot: 2935894)								
EM1306677-002 DUP1	EP080: C6 - C10 Fraction	-	330 µg/L	76.0	-	45	127	-	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 29360	12)								
EM1306677-003 GW39	EK057G: Nitrite as N	-	0.5 mg/L	96.2		70	130	-	
EK071G: Reactive Phosphorus as P by discrete analyser	(QCLot: 2936013)								
EM1306677-003 GW39	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	94.7	1	20	130	I	
ED045G: Chloride Discrete analyser (QCLot: 2936015)									
EM1306677-003 GW39	ED045G: Chloride	16887-00-6	400 mg/L	112		70	130	-	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot:	2936017)								
EM1306677-003 GW39	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not	-	20	130	ŀ	ļ
				Determined					
EK040P: Fluoride by PC Titrator (QCLot: 2936333)									
EM1306539-002 Anonymous	EK040P: Fluoride	16984-48-8	5.0 mg/L	107		70	130		
EG020F: Dissolved Metals by ICP-MS (QCLot: 2936508)									
EM1306623-001 Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	110		89	139	1	
	EG020A-F: Cadmium	7440-43-9	0.05 mg/L	102		75	131	1	
	EG020A-F: Cobalt	7440-48-4	0.2 mg/L	110		77	129	ļ	
	EG020A-F: Copper	7440-50-8	0.2 mg/L	114		71	127	l	
	EG020A-F: Lead	7439-92-1	0.2 mg/L	114		71	123	I	
	EG020A-F: Manganese	7439-96-5	0.2 mg/L	100		66	132	I	
	EG020A-F: Nickel	7440-02-0	0.2 mg/L	103		73	129	l	
	EG020A-F: Zinc	7440-66-6	0.2 mg/L	111		68	136	-	
EK026SF: Total CN by Segmented Flow Analyser (QCLot	: 2936566)								
EM1306677-002 DUP1	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	# 56.1		70	130	-	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 293	36860)								
EM1306677-002 DUP1	EK055G: Ammonia as N	7664-41-7	1.0 mg/L	118		70	130	-	

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Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

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Client Contact Address	: ENVIRONMENTAL EARTH SCIENCES : MR REGIN ORQUIZA : P.O.BOX 2253 FOOTSCRAY VIC, AUSTRALIA 3011	Laboratory Contact Address	: Environmental Division Melbourne : Carol Walsh : 4 Westall Rd Springvale VIC Australia 3171
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Facsimile	: +61 03 96871844	Facsimile	: +61-3-8549 9601
Project Site	: 210074 Sth Melbourne Gasworks	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
C-O-C number	:	Date Samples Received	: 24-JUN-2013
Sampler	: SFL/KK	Issue Date	: 01-JUL-2013
Order number	:	No. of samples received	ō. ō.
Quote number	: ME/330/13	No. of samples analysed	

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

This Interpretive Quality Control Report contains the following information:

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

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Client	ENVIRONMENTAL EARTH SCIENCES
Project	210074 Sth Melbourne Gasworks



Analysis Holding Time Compliance

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

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

Evaluation: \mathbf{x} = Holding time breach ; \checkmark = Within holding time. Evaluation × > > > > > Due for analysis 24-JUN-2013 01-JUL-2013 08-JUL-2013 22-JUL-2013 22-JUL-2013 01-JUL-2013 Analysis 26-JUN-2013 26-JUN-2013 26-JUN-2013 26-JUN-2013 26-JUN-2013 26-JUN-2013 Date analysed Evaluation l ł Date extracted Due for extraction Extraction / Preparation 08-JUL-2013 22-JUL-2013 22-JUL-2013 01-JUL-2013 01-JUL-2013 ł I ł I I I 24-JUN-2013 24-JUN-2013 24-JUN-2013 24-JUN-2013 24-JUN-2013 24-JUN-2013 Sample Date GW42D, GW41, GW19 GW19 GW19 GW19 GW39, GW41, GW39, GW41, GW23, GW39, GW41, GW39, GW41, GW39, DUP1, GW19 ED041G: Sulfate (Turbidimetric) as SO4 2- by DA Clear Plastic Bottle - Natural (ED037-P) Clear Plastic Bottle - Natural (ED041G) Clear Plastic Bottle - Natural (EA015H) Clear Plastic Bottle - Natural (ED045G) Clear Plastic Bottle - Natural (ED093F) Clear Plastic Bottle - Natural (EA005) ED045G: Chloride Discrete analyser ED093F: Dissolved Major Cations ED037P: Alkalinity by PC Titrator EA015: Total Dissolved Solids Container / Client Sample ID(s) Matrix: WATER GW42D, EA005: pH GW42D, GW42D, GW42D, GW23, GW42D GW43, GW23, GW23, GW39, GW41, GW43, GW23, GW43, GW19 GW23, GW43, GW43, GW43, Method

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Matrix: WATER						Evaluation:	× = Holding time	oreach; ✓ = Within	holding time.
Method			Sample Date	Ex	traction / Preparation			Analysis	
Container / Client Sample	(<i>D</i> (<i>s</i>)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Meta	is by ICP-MS								
Clear Plastic Bottle - Nitr	ic Acid; Filtered (EG020A-F)	Ĩ	0100 MIII 40		31 DEC 2012		2100 MIII 70		
GW43, GW39	UL UL	JP1, M42D	24-4UN-2010	I	Z 1-DEC-ZU 13		51.02-NDC-12	Z 1-UEU-ZU 13	>
GW41,	GV	W23,							
GW19									
EK026SF: Total CN by	egmented Flow Analyser								
White Plastic Bottle-NaO	H (EK026SF)								
GW23			24-JUN-2013	1	08-JUL-2013		26-JUN-2013	08-JUL-2013	>
White Plastic Bottle-NaO	H - Pb Acetate (EK026SF)	2	24- IIIN-2013		08-1111-2013	-	26_ IIIN_2013	08-1111-2013	
GW39.		M42D.							>
GW41,	<u>G</u> V	W19							
EK040P: Fluoride by PC	Titrator								
Clear Plastic Bottle - Nat	ıral (EK040P)								
GW43,	GV	M39,	24-JUN-2013	ł	22-JUL-2013		26-JUN-2013	22-JUL-2013	>
GW42D,	QV	W41,							
GW23,	GV	M19							
EK055G: Ammonia as N	by Discrete Analyser								
Clear Plastic Bottle - Sult	uric Acid (EK055G)				-				
GW43,	DL	JP1,	24-JUN-2013	ł	22-JUL-2013		27-JUN-2013	22-JUL-2013	>
GW39,	GV	M42D,							
GW41, GW19	Q	M23,							
	And and and and a								
Close Plastic Battle Not									
GW43. GW43.	Jrai (ENUS/G) GV	M39.	24-JUN-2013	-	26-JUN-2013	1	25-JUN-2013	26-JUN-2013	>
GW42D,	GV	M41,							•
GW23,	GV	M19							
EK071G: Reactive Phos	phorus as P by discrete analyser								
Clear Plastic Bottle - Nat	ıral (EK071G)								
GW43,	GV	M39,	24-JUN-2013	ł	26-JUN-2013		25-JUN-2013	26-JUN-2013	>
GW42D,	QV	M41,							
GW23,	GV	M19							
EP080/071: Total Petrol	um Hydrocarbons								
Amber Glass Bottle - Un	preserved (EP071)								
GW43,	DL	JP1,	24-JUN-2013	26-JUN-2013	01-JUL-Z013	>	26-JUN-2013	U5-AUG-2013	>
GW39,		M42D,							
GW19.		VZ3, nsata 1							
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Matrix: WATER						Evaluation:	x = Holding time t	ireach; ✓ = Within	holding time.
Method			Sample Date	Ext	action / Preparation			Analysis	
Container / Client Sample	ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP071 SG: Total Petrol	um Hydrocarbons - Silica gel cleanup								
Amber Glass Bottle - UI GW39, GW23,	preserved (EP071SG) GW42D, GW19		24-JUN-2013	26-JUN-2013	01-JUL-2013	>	26-JUN-2013	05-AUG-2013	>
EP071 SG: Total Recov	prable Hydrocarbons (NEPM 2010 draft) - Sil	ica gel cleanup							
Amber Glass Bottle - UI GW39, GW23,	preserved (EP071SG) GW42D, GW19		24-JUN-2013	26-JUN-2013	01-JUL-2013	>	26-JUN-2013	05-AUG-2013	>
EP074A: Monocyclic A	omatic Hydrocarbons								
Amber VOC Vial - Sultu GW43, GW39	IC ACIO (EPU/4) DUP1, GW42D		24-JUN-2013	26-JUN-2013	08-JUL-2013	>	26-JUN-2013	08-JUL-2013	>
GW41,	GW23,								
GW19,	Rinsate								
Trip 1									
EP074H: Naphthalene									
Amber VOC Vial - Sulfu	ic Acid (EP074)								
GW43,	DUP1,		24-JUN-2013	26-JUN-2013	08-JUL-2013	>	26-JUN-2013	08-JUL-2013	>
GW39,	GW42D,								
GW41,	GW23,								
GW19,	Rinsate 1	_							
Trip 1									
EP080/071: Total Reco	erable Hydrocarbons - NEPM 2010 Draft								
Amber VOC Vial - Sulfui	ic Acid (EP080)								
GW43,	DUP1,		24-JUN-2013	26-JUN-2013	08-JUL-2013	>	26-JUN-2013	08-JUL-2013	>
GW39,	GW42D,								
GW41,	GW23,								
GW19,	Rinsate -	_							

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Quality Control Parameter Frequency Compliance

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

Matrix: WATER

Evaluation: $\mathbf{x} = Quality Control frequency not within specification; <math>\mathbf{v} = Quality Control frequency within specification.$

Client Project	: ENVIRONMENTAL EARTH SCIENCES : 210074 Sth Melbourne Gasworks							(SIR)
Matrix: WATER					Evaluation:	× = Quality Co	ntrol frequency n	ot within specification ; \checkmark = Quality Control frequency within specification.
Quality Control Sample Type			CO	unt		Rate (%)		Quality Control Specification
Analytical Methods		Method	QC	Reaular	Actual	Expected	Evaluation	
Method Blanks (MB) - Cont	tinued							
Chloride by Discrete Analy:	ser	ED045G	-	16	6.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-M	IS - Suite A	EG020A-F	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Fluoride by PC Titrator		EK040P	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved		ED093F	-	16	6.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NC	Dx) by Discrete Analyser	EK059G	-	-	100.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete And	alyser	EK057G	-	11	9.1	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P.	-By Discrete Analyser	EK071G	-	9	16.7	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as S	304 2- by Discrete Analyser	ED041G	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segment	ed Flow Analyser	EK026SF	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (Hig	h Level)	EA015H	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction		EP071	-	19	5.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Total Petroleum Hyd	Irocarbons - Silica Gel Clean Up	EP071SG	-	4	25.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX		EP080	-	15	6.7	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compound	g	EP074	1	12	8.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)								
Ammonia as N by Discrete	analyser	EK055G	-	20	5.0	5.0	>	ALS QCS3 requirement
Chloride by Discrete Analy:	ser	ED045G	-	16	6.3	5.0	>	ALS QCS3 requirement
Dissolved Metals by ICP-M	IS - Suite A	EG020A-F	-	20	5.0	5.0	>	ALS QCS3 requirement
Fluoride by PC Titrator		EK040P	-	20	5.0	5.0	>	ALS QCS3 requirement
Nitrite and Nitrate as N (NC	0x) by Discrete Analyser	EK059G	-	-	100.0	5.0	>	ALS QCS3 requirement
Nitrite as N by Discrete Ana	alyser	EK057G	-	11	9.1	5.0	>	ALS QCS3 requirement
Reactive Phosphorus as P.	-By Discrete Analyser	EK071G	-	9	16.7	5.0	>	ALS QCS3 requirement
Sulfate (Turbidimetric) as S	304 2- by Discrete Analyser	ED041G	-	20	5.0	5.0	>	ALS QCS3 requirement
Total Cyanide by Segment	ed Flow Analyser	EK026SF	-	20	5.0	5.0	>	ALS QCS3 requirement
TPH - Semivolatile Fraction		EP071	-	19	5.3	5.0	>	ALS QCS3 requirement
TPH - Total Petroleum Hyd	Irocarbons - Silica Gel Clean Up	EP071SG	-	4	25.0	5.0	>	ALS QCS3 requirement
TPH Volatiles/BTEX		EP080	1	15	6.7	5.0	>	ALS QCS3 requirement
Volatile Organic Compound	ds	EP074	~	12	8.3	5.0	>	ALS QCS3 requirement



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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 methy	ods have been developed a	re provided within	the Method Descriptions.
Analytical Methods	Method	Matrix	Method Descriptions
Hd	EA005	WATER	APHA 21st ed. 4500 H+ B. pH of water samples is determined by ISE either manually or by automated pH meter. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Dissolved Solids (High Level)	EA015H	WATER	In-House, APHA 21st ed., 2540C A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Alkalinity by PC Titrator	ED037-P	WATER	APHA 21st ed., 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	APHA 21st ed., 4500-SO4 Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Chloride by Discrete Analyser	ED045G	WATER	APHA 21st ed., 4500 CI - 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 librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	Major Cations is determined based on APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises the 0.45um filtered sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2) Hardness parameters are calculated based on APHA 21st ed., 2340 B. This method is compliant with NEPM
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(1999) scriedule B(3) (Appax. ∠) (APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

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Analytical Methods		Method	Matrix	Method Descriptions
Total Cyanide by Segm Analyser	ented Flow	EK028SF	WATER	APHA 4500-CN-O. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Fluoride by PC Titrator		EK040P	WATER	APHA 21st ed., 4500 FC 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 (1999) Schedule B(3) (Appdx. 2)
Ammonia as N by Discr	rete analyser	EK055G	WATER	APHA 21st ed., 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Ammonium as N		EK055G-NH4	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 21st ed., 4500-NH3 G. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrite as N by Discrete	Analyser	EK057G	WATER	APHA 21st ed., 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrate as N by Discrete	e Analyser	EK058G	WATER	APHA 21st ed., 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrite and Nitrate as N Analyser	(NOx) by Discrete	EK059G	WATER	APHA 21st ed., 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Reactive Phosphorus a Analyser	s P-By Discrete	EK071G	WATER	APHA 21st ed., 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Ionic Balance by PCT D DA	0A and Turbi SO4	EN055 - PG	WATER	APHA 21st Ed. 1030F. The Ionic Balance is calculated based on the major Anions and Cations. The major anions include Alkalinity, Chloride and Sulfate which determined by PCT and DA. The Cations are determined by Turbi SO4 by DA. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Frac	stion	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH - Total Petroleum I Silica Gel Clean Up	Hydrocarbons -	EP071SG	WATER	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
Volatile Organic Compc	spunc	EP074	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

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Analytical Methods	Method	Matrix	Method Descriptions
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	0RG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EM1306677-003	GW39	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined		MS recovery not determined, background level greater than or equal to 4x spike level.
EK026SF: Total CN by Segmented Flow Analyser	EM1306677-002	DUP1	Total Cyanide	57-12-5	56.1 %	70-130%	Recovery less than lower data quality objective

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

Regular Sample Surrogates

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

Outliers : Analysis Holding Time Compliance

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

Matrix: WATER							
Method		Ext	action / Preparation			Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005: pH							
Clear Plastic Bottle - Natural							
GW43,	GW39,				26-JUN-2013	24-JUN-2013	7
GW42D,	GW41,						
GW23,	GW19						

Outliers : Frequency of Quality Control Samples

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

No Quality Control Sample Frequency Outliers exist.



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LABID	Sample ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (raior to codas balant)	TOTAL	ES IONIC BALANCE 11TE - Includes - 1, TDS, Ca, Mg, Na, K, 1, SO4, Alk, F, NO3, eactive P, Ammonia	internation (field pH and bid temp nut be provided on the COC)	issolved metals - Al, s, Cd, Cu, Fe, Pb, Ni, n, Co, Se, B & Mn	otal Cyanide	analaringsN - H≥ro	A LbH - illes del clesu nb - ou bH (Ce-C38) bine LKH	PH (C10-C36) and 794	0575-01-0-10 WH	1919	Hd pla	qmət blət		
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EK026SF : EM13	06718-002 matrix spike failed for TCN o	due to possible sample interference. This has been confirmed by re-analysis.	
• EM1306738-004:	Ammonia as N results were done by b	buchi method (EK055).	
EP071: Particula	ar samples EM1306738-001,001DUP,010	0 have LOR raised due to laboratory background.	
 EPU/1: Sample Ionic Balance ot 	EM1306738-010 was extracted using vo ut of acceptable limits for sample #1 an	olatiles vials instead of unpreserved amber bottle due to laboratory preparation error. nd #5 due to analytes not quantified in this report.	
 Ionic balances w 	vere calculated using: major anions - ch	thoride. alkalinity and sulfate : and maior cations - calcium. magnesium. potassium. sodium and ammonia #4.	
Ionic balances w	vere calculated using: major anions - ch	chorde, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.	
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Analytical Results								
Sub-MI tri<: WATER (MI tri<: WATER)		Clie	nt sample ID	GW18	GW01	GW40	GW28	GW35
	Clie	nt samplir	ig date ∕ time	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-201385:00	25-JUN-2013815:00
Compound	AS Number	LOR	Unit	EM1306738-001	EM1306738-002	EM1306738-003	EM1306738-004	EM1306738-005
EA005: pH								
pH Value	-	0.01	pK&Jnit	6.83	6.73	5.57	7.18	6.87
EA015: Total Dissolved Solids	-							
Total Dissolved Solids @180°C		10	mg/L	15600	3920	5300	1180	5370
ED037P: Alkalinity by PC Titrator							•	
Total Alkalinity as CaCO3		-	mg/L	460	654	201	404	515
ED041G: Sulfate (Turbidimetric) as SO4 2- by	DA							
Sulfate as SO4 - Turbidimetric	14F0F-79-F	-	mg/L	1280	178	314	220	403
ED045G: Chloride Discrete analyser	-				-			
Chloride	16FF7-00-6	-	mg/L	9710	1890	3450	302	3330
ED093F: Dissolved Major Cations							•	
Calcium	7440-70-2	-	mg/L	968	345	466	33	160
Magnesium	7439-95-4	٦	mg/L	727	287	151	25	199
Sodium	7440-23-5	-	mg/L	3590	607	1400	251	1710
Potassium	7440-09-7	٦	mg/L	204	78	60	9	59
EG020F: Dissolved Metals by ICP-MS	-				-			
Aluminum	7429-90-5	0.01	mg/L	0.01	HD.01	0.04	HD.01	H0.01
Arsenic	7440-3F-2	0.001	mg/L	0.004	0.478	0.010	0.314	1.11
Cadmium	7440-43-9	0.0001	mg/L	H0.0001	0.0001	0.0002	HD.0001	0.0003
Cobalt	7440-4F-4	0.001	mg/L	0.002	0.003	0.006	H0.001	0.003
Copper	7440-50-F	0.001	mg/L	0.004	0.002	0.065	H0.001	0.002
Lead	7439-92-1	0.001	mg/L	H0.001	HD.001	HD.001	H0.001	HD.001
Manganese	7439-96-5	0.001	mg/L	1.10	0.266	0.862	0.175	0.741
Nickel	7440-02-0	0.001	mg/L	HD.001	0.056	0.041	0.018	0.020
Selenium	77F2-49-2	0.01	mg/L	HD.01	H0.01	H0.01	H0.01	H0.01
Zinc	7440-66-6	0.005	mg/L	0.010	0.039	0.331	0.005	0.014
Boron	7440-42-F	0.05	mg/L	1.01	1.37	0.67	0.81	1.08
Iron	7439-F9-6	0.05	mg/L	H0.05	2.76	0.39	2.20	7.56
EK026SF: Total CN by Segmented Flow Anal	lyser							
Total Cyanide	57-12-5	0.004	mg/L	0.028	0.017	H0.004	0.016	0.015
EK040P: Fluoride by PC Titrator								
Fluoride	169F4-4F-F	0.1	mg/L	0.7	1.4	0.6	1.8	2.2
EK055G: Ammonia as N by Discrete Analyse								
Ammonia as N	7664-41-7	0.01	mg/L	7.02	3.32	0.16	84.6	2.57

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Analytical Results								
Sub-MI tri<: WATER (MI tri<: WATER)		Clie	ent sample ID	GW18	GW01	GW40	GW28	GW35
	Clie	nt samplir	ng date / time	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00
Compound	AS Number	LOR	Unit	EM1306738-001	EM1306738-002	EM1306738-003	EM1306738-004	EM1306738-005
EK055G-NH4: Ammonium as N by DA								
Ammonium as N		0.01	mg/L	7.02	3.32	0.16	84.6	2.57
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N		0.01	mg/L	0.01	HD.01	HD.01	HD.01	H0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-F	0.01	mg/L	0.15	0.06	1.39	0.01	HD.01
EK071G: Reactive Phosphorus as P by discre	te analyser							
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	H0.01	H0.01	HD.01	H0.01	H0.01
EN055: Ionic Balance	-			-			-	
Total Anions		0.01	m q/L	310	70.1	108	21.2	113
Total Cations		0.01	m q/L	270	69.2	98.1		100
Total Cations		0.01	m q/L				19.2	-
Ionic Balance		0.01	%	6.94	0.60	4.73		5.82
Ionic Balance		0.01	%				4.86	
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	1	hg/L	Ŧ	H	Ħ	Ħ	4
Toluene	10F-FF-3	2	hg/L	Н2	Н2	H	Н2	Н2
Ethylbenzene	100-41-4	2	hg/L	Η2	H2	H2	H2	H2
meta- & para-Xylene 10F-3F	-38106-42-3	2	hg/L	НЗ	H2	H	H2	H2
Styrene	100-42-5	5	hg/L	H5	H5	H5	H5	H5
ortho-Xylene	95-47-6	2	hg/L	Ъ	H2	4	H	8
Isopropylbenzene	9F-F2-F	5	hg/L	H5	H5	H5	H5	H5
n-Propylbenzene	103-65-1	5	hg/L	H5	H5	H5	H5	H5
1.3.5-Trimethylbenzene	10F-67-F	5	hg/L	H5	H5	H5	H5	H5
sec-Butylbenzene	135-9F-F	5	hg/L	£	H5	H5	H5	H5
1.2.4-Trimethylbenzene	95-63-6	5	hg/L	H5	H5	H5	H5	H5
tert-Butylbenzene	9F-06-6	5	hg/L	H5	H5	H5	H5	H5
p-ls opropy Itoluene	99-F7-6	5	hg/L	H5	H5	H5	H5	H5
n-Butylbenzene	104-51-F	5	hg/L	H5	щ	H5	H5	H5
EP074H: Naphthalene								
Naphthalene	91-20-3	7	hg/L	ĿН	ĽН	2H	2H	2H
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		20	hg/L	H20	H20	H20	H20	H20
C10 - C14 Fraction		50	hg/L	H50	H50	HEO	HEO	HEO

: 5øfø	rd r ; EM130673F	: ENVIRONMENTAL EARTK & CIENCES	· 21007485th8M sourn 8GI eworke
PI g	Work&Drd r	Cs nt	Proi ct



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Sub-MI tri<: WATER (MI tri<: WATER)	U	Client sample ID	GW18	GW01	GW40	GW28	GW35
	Client sam	oling date / time	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-20138 5:00	25-JUN-2013815:00	25-JUN-2013815:00
Compound CAS Num	iber LOR	Unit	EM1306738-001	EM1306738-002	EM1306738-003	EM1306738-004	EM1306738-005
EP080/071: Total Petroleum Hydrocarbons - Continue	q						
C15 - C28 Fraction	100	hg/L	H100	200	H100	160	300
C29 - C36 Fraction	50	hg/L	HEO	H50	H50	H50	H50
^{\8} C10 - C36 Fraction (sum)	50	hg/L	H50	200	H50	160	300
EP080/071: Total Recoverable Hydrocarbons - NEPM	I 2010 Draft	-					
C6 - C10 Fraction	20	hg/L	H20	HZO	H20	H20	H20
>C10 - C16 Fraction	100	hg/L	H100	H100	H100	H1 00	180
>C16 - C34 Fraction	100	hg/L	H140	200	H100	170	160
>C34 - C40 Fraction	100	hg/L	H100	H100	H100	H100	H1 00
^{\8} >C10 - C40 Fraction (sum)	100	hg/L	H100	200	H100	170	340
EP074S: VOC Surrogates	-						
1.2-Dichloroethane-D4 1.2-Dichloroethane-D4	0.1	%	122	130	119	119	115
Toluene-D8 2037-2	26-5 0.1	%	111	109	111	100	110
4-Bromofluorobenzene 460-0	0.4 0.1	%	102	103	109	99.5	109
EP080S: TPH(V)/BTEX Surrogates							
1.2-Dichloroethane-D4 1.2-Dichloroethane-D4	0.1	%	122	112	119	103	115
Toluene-D8 2037-2	26-5 0.1	%	97.9	99.2	98.9	90.4	98.8
4-Bromofluorobenzene	0.1	%	98.9	1.99	103	94.6	100

: 6សម្ល	: EM130673F	: ENVIRONMENTALÆARTK®CIENCES	: 210074185th 3M shourn 8GI eworke
PI g	Work&Ord r	Cs nt	Proj ct



Analytical Results Sub-MI tri∹ water (MI tri∹ water)		Clien	t sample ID	GW22	Rinsate 2	Trip 2	Trip 3	Dup 2
	Clie	nt sampling	date / time	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00
Compound CAS	S Number	LOR	Unit	EM1306738-006	EM1306738-007	EM1306738-008	EM1306738-009	EM1306738-010
EA005: pH								
pH Value		0.01	pK&Unit	6:99		-		
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C		10	mg/L	596				
ED037P: Alkalinity by PC Titrator	-							
Total Alkalinity as CaCO3		-	mg/L	227				
ED041G: Sulfate (Turbidimetric) as SO4 2- by D/	A				-			
Sulfate as SO4 - Turbidimetric 14	4F0F-79-F	-	mg/L	256				
ED045G: Chloride Discrete analyser	-							
Chloride 16	6FF7-00-6	-	mg/L	44				
ED093F: Dissolved Major Cations	-			-	-	-	-	
Calcium 7.	7440-70-2	-	mg/L	85		-		
Magnesium 7.	7439-95-4	-	mg/L	28				
Sodium 7.	7440-23-5	-	mg/L	76				
Potassium 7.	7440-09-7	-	mg/L	28				
EG020F: Dissolved Metals by ICP-MS				-	-			
Aluminium 7.	7429-90-5	0.01	mg/L	HD.01	-	-	-	HD.01
Arsenic 7.	7440-3F-2	0.001	mg/L	0.010	-	ł		0.308
Cadmium 7.	7440-43-9	0.0001	mg/L	0.0004				H0.0001
Cobalt 7.	7440-4F-4	0.001	mg/L	0.003				H0.001
Copper 7.	7440-50-F	0.001	mg/L	0.002				HD.001
Lead 7.	7439-92-1	0.001	mg/L	0.002				H0.001
Manganese 7.	7439-96-5	0.001	mg/L	0.047				0.173
Nickel 7.	7440-02-0	0.001	mg/L	0.053	-	-		0.017
Selenium 7	77F2-49-2	0.01	mg/L	H0.01		-		HD.01
Zinc	7440-66-6	0.005	mg/L	0.035	-	ł		H0.005
Boron 7.	7440-42-F	0.05	mg/L	0.88	-	-		0.86
7. 7.	7439-F9-6	0.05	mg/L	0.07				2.12
EK026SF: Total CN by Segmented Flow Analys	ser				-			
Total Cyanide	57-12-5	0.004	mg/L	0.140				0.018
EK040P: Fluoride by PC Titrator	-				-	-	-	
Fluoride 16	69F4-4F-F	0.1	mg/L	0.7				
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.71		-		

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Work&Ord r	: EM130673F
Cs nt	ENVIRONMENTAL EARTK & CIENCES
Proj ct	: 210074 Sth 3M shourn SGI eworke



The formation of the fo	Analytical Results sub-MI tris: water (MI tris: water)		Clie	nt sample ID	GW22	Rinsate 2	Trip 2	Trin 3	Dub 2
		Clie	nt samplin	g date / time	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00
Cutoticitute at VI polyCutoticitute at VI poly \mathbf{C}	Compound	S Number	LOR	Unit	EM1306738-006	EM1306738-007	EM1306738-008	EM1306738-009	EM1306738-010
	EK055G-NH4: Ammonium as N by DA								
E-GATGC: Internet National Internet National Internet National 	Ammonium as N	-	0.01	mg/L	0.71				
Image and a mode and	EK057G: Nitrite as N by Discrete Analyser					-	-		
Criccososunitare as by Observed Analysesand	Nitrite as N		0.01	mg/L	HD.01				
Include and the model of the model of model and the model of model and the model of model and the model	EK058G: Nitrate as N by Discrete Analyser	-				-			
Effort Revenue Propriement and Proprisment and Proprid Proprisment and Proprisment and Proprisment and Proprisment and	Nitrate as N 14	4797-55-F	0.01	mg/L	0.82				
	EK071G: Reactive Phosphorus as P by discrete	e analyser							
EVGS: foric Patterio Image: former patterio <th>Reactive Phosphorus as P 14</th> <td>4265-44-2</td> <td>0.01</td> <td>mg/L</td> <td>H0.01</td> <td></td> <td></td> <td></td> <td></td>	Reactive Phosphorus as P 14	4265-44-2	0.01	mg/L	H0.01				
Total Antone 0.01 $m q l_{1}$ 0.11 $m q l_{2}$ 0.11 $m q l_{1}$ 0.11 <th>EN055: Ionic Balance</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	EN055: Ionic Balance								
	Total Anions	-	0.01	m q/L	11.1				
	Total Cations	1	0.01	m q/L	10.6				
EPTAt: Monocyclic Atomatic Mydroarthons 1	Ionic Balance		0.01	%	2.48				
Image: matrix for the field of th	EP074A: Monocyclic Aromatic Hydrocarbons		-			-			
Totate $10 + Fit10 + Fit$	Benzene	71-43-2	-	hg/L	도	ħ	두	도	도
Hyberene 00.414 2 ygl ycl	Toluene	10F-FF-3	2	hg/L	꾸	£	F	Ŗ	오
model pertexyment Incident for the pertex pertex Incident for the pert	Ethylbenzene	100-41-4	2	hg/L	연	9	9	9	7
Bytyme 100-126 5 $ugl ugl ugl<$	meta- & para-Xylene 10F-36	8106-42-3	5	hg/L	연	9	9	9	연
otholythe $63/76$ 2 $µgl Hc $	Styrene	100-42-5	2	hg/L	£	92	92	92	£
Rotropyberate $gr/2r gr/2r $	ortho-Xylene	95-47-6	2	hg/L	84	P	Я	H	Р
Propylenzene (03.65.1 (0 <th>Isopropylbenzene</th> <th>9F-F2-F</th> <th>5</th> <th>hg/L</th> <th>H5</th> <th>H5</th> <th>H5</th> <th>H5</th> <th>H5</th>	Isopropylbenzene	9F-F2-F	5	hg/L	H5	H5	H5	H5	H5
13.5-Trindutylbanzate $16-57-1$ 5 $10/1$ $16-57-1$ 10 $16-57-1$ $10-57-1$ <th< th=""><th>n-Propylbenzene</th><th>103-65-1</th><th>ъ</th><th>hg/L</th><th>£</th><th>£</th><th>£</th><th>£</th><th>£</th></th<>	n-Propylbenzene	103-65-1	ъ	hg/L	£	£	£	£	£
were ter bubbenzate135-9F5<	1.3.5-Trimethylbenzene	10F-67-F	5	hg/L	£	£	£	92	£
1.2.1-Trimethybenzene $56-36$ 5 $µgl µgl µgl<$	sec-Butylbenzene	135-9F-F	5	hg/L	£	£	£	£	£
therefore $9-0-6$ 5 $yglt$ $be<$	1.2.4-Trimethylbenzene	95-63-6	ъ	hg/L	£	£	£	£	£
Pisopropylotine $9-F7-6$ $19/1$ $19/1$ 110 <t< th=""><th>tert-Butylbenzene</th><th>9F-06-6</th><th>Ð</th><th>hg/L</th><th>£</th><th>£</th><th>£</th><th>£</th><th>£</th></t<>	tert-Butylbenzene	9F-06-6	Ð	hg/L	£	£	£	£	£
n-Butylbarzene $10451F$ 5 $yglH5H5H5H5H5H5H5H5POTAH: NaphthalenePotAH: Naphthalene91-20-37yglH7H7H7H7H7AphthalenePotAH: Naphthalene91-20-37yglH7H7H7H7PotAH: NaphthalenePotAH: Naphthalene$	p-lsopropyltoluene	99-F7-6	Ð	hg/L	£	92	£	£	£
P0741: Naphtlatene P0741: Naphtlatene P1 P1 Naphtlatene 91-20-3 7 µg/L H7 H7 <th>n-Butylbenzene</th> <th>104-51-F</th> <th>ъ</th> <th>hg/L</th> <th>£</th> <th>£</th> <th>£</th> <th>£</th> <th>£</th>	n-Butylbenzene	104-51-F	ъ	hg/L	£	£	£	£	£
Naphthalene 91-20-3 7 µg/L H7	EP074H: Naphthalene		•••						
FP080/071: Total Petroleum Hydrocarbons 20 μg/L H20 H20 H20 H20	Naphthalene	91-20-3	7	hg/L	Ч	ΔН	ЦН	Ч	2H
C6 - C9 Fraction 20 $\mu g/L$ H20 H20 H20	EP080/071: Total Petroleum Hydrocarbons								
C10 - C14 Fraction \dots 50 $\mu g/L$ H50 \dots \dots \dots \dots \dots H50 \dots \dots H50 \dots \dots H50 \dots \dots H50 \dots \dots \dots H50 \dots	C6 - C9 Fraction	1	20	hg/L	H20	H20			H20
C15.C28 Fraction 100 μg/L H100 100 160 C29.C36 Fraction 50 μg/L H50 H50 H50	C10 - C14 Fraction	-	50	hg/L	HEO	HEO			H50
C29 - C36 Fraction 50 µg/L H50 H50 H50 H50	C15 - C28 Fraction	-	100	hg/L	H100	H100			160
	C29 - C36 Fraction	-	50	hg/L	H50	H50			HF0

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Disint ENVIRONMENTALÆARTK®CIENCES Proj ct : 210074&th8M &ourm &Bl eworke	Vork®rd r	· EM130673F
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	Proj ct	: 210074&th&M &ourn & eworke

Analytical Results



Sub-MI tri<: WATER (MI tri<: WATER)		Clier	nt sample ID	GW22	Rinsate 2	Trip 2	Trip 3	Dup 2	
	Clie	ent samplin,	g date / time	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00	25-JUN-2013815:00	
Compound	SAS Number	LOR	Unit	EM1306738-006	EM1306738-007	EM1306738-008	EM1306738-009	EM1306738-010	
EP080/071: Total Petroleum Hydrocarbons - 0	Continued								
^{^8} C10 - C36 Fraction (sum)		50	hg/L	H50	HEO			160	
EP080/071: Total Recoverable Hydrocarbons	- NEPM 2010) Draft			-				
C6 - C10 Fraction		20	hg/L	HZO	H20			H20	
>C10 - C16 Fraction	-	100	hg/L	H100	H100			H100	
>C16 - C34 Fraction	-	100	hg/L	H100	H100			240	
>C34 - C40 Fraction	-	100	hg/L	H100	H100			H100	
^{\8} >C10 - C40 Fraction (sum)		100	hg/L	H100	H100			240	
EP074S: VOC Surrogates					-	-			
1.2-Dichloroethane-D4	17060-07-0	0.1	%	118	115	109	115	120	
Toluene-D8	2037-26-5	0.1	%	98.4	97.8	96.0	112	101	
4-Bromofluorobenzene	460-00-4	0.1	%	93.9	94.1	99.1	111	99.2	
EP080S: TPH(V)/BTEX Surrogates	-								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	102	100			105	
Toluene-D8	2037-26-5	0.1	%	88.3	88.5			90.9	
4-Bromofiu or obenzene	460-00-4	0.1	%	93.0	88.6			95.5	

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Surrogate Control Limits

Sub-MI tri<: WATER		Recovery	Limits (%)
Compound	CAS Number	Том	High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	69	133
Toluene-D8	2037-26-5	72	12F
4-Bromofluorobenzene	460-00-4	70	130
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	70	132
Toluene-D8	2037-26-5	69	125
4-Bromofiuorobenzene	460-00-4	61	129



ALS	Group		Sciences Mr S
Environmental L	Division		
	QUALITY CON	ITROL REPORT	
Work Order	: EM130673V	Page	: 1 of 1L
i læEy i oEyaRy VIBBless	: ENHIRONMENTAL EARTS CIENCE : GVI NO QGUZIMAV : P.Q.XQ2 LL53 FQQTSI GVW VNI, VZSTGVbNV3011	bar otajotC i oEjaRy MBRess	:vEmntoEDeEyalMmmsnoEuelroctEe :iatolhalsd :4hesyallGBSptrEgnaleVNiWcsytalna3171
v -D ath TelepdoEe FaRsrDrie	: totqcrza@eesnr rz : +61 03 96871666 : +61 03 96871844	v -Danh TelepdoEe FaRsnDne	: Ratol.walsd@alsglor al.RoD : +61-3-8549 9608 : +61-3-8549 9601
PtojeRy Smo	: L10074 Syd u elr octEe I aswotks	Ui bemel	: Ov Pu 1999 SRdeBcle X(3) aEB VbS Ui S3 teqcriteDeEy
oije i -Q-i EcDret SaDplet QtBet EcDret		Maye SaD ples GeRemeB N\$sce Maye	: L5-JZ O-L013 : 01-JZ b-L013
Ucoye EcDr et	: u v /330/13	Oo. of saDples teRemeB Oo. of saDples aEalGeB	
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L of 1L v u 1306738 v OVNGQOu L10074 Syd	<pre>fS cseB rC y cseB rC y cDploceB rE yd oE das r eeE p (H) tesclyns dq B tescly Biffets < Gefets yo sa</pre>	of tepotyEg of tepotyEg yme PetReEyag s farheB Ui
	Commen. al ptoReBctes oReBctes ate e te BeyetDrEayr tyeB less ydaE tyeB less ydaE G of a tepotyel WEoECD ocs	i VB OCD re bQG < bruin GPM < Gelar = < NEBrraye = < NEBrraye
Page 1 otk QtBet IræEy >tojeRy	General I Tde aEalOyR BenælopeB ptc h dete Dorsyc i dete a tepol i dete yde bQ	

yde acydotrzeB sngEayotnes rEBnRayeB relow. vleRytoEnR sngEnEg das reeE RattneB ocy nE RoDplnaERe wnyd	Accreditation Category	deD sy u elr octe KeotgaErRs u elr octe KeotgaErRs u elr octe KeotgaErRs u elr octe KeotgaErRs u elr octe KeotgaErRs u elr octe QtgaErRs u elr octe QtgaErRs eaßet u elr octe MeotgaErRs u elr octe MeotgaErRs u elr octe MeotgaErRs	
S eEy das reeE eleRytoEnRallC sngEeB r0 oeRfineBinEL1 i FG Paty11.	Position	Bo SeErot NEotgaErR SeErot SeD molay i deD nsy DoE-u eyals TeaD	
Signatorie: Tdıs BoRcDe ptoReBctes sp	Signatories	MinaEnFetEaE OaERCh aEg Vatsda x o h r	
OWTWWRRteBreB bar otayotC8L5	NRREBIJEB fot BAD Alga ERa wind	BQ/Ni 170L5.	
		ACCREDITATION	

Page	: 3 of 1L
h otk QtBet	: v u 1306738
i IreEy	: V OVNGQOU V OTWb V WGTX SI
PtojeRy	: L10074 Syd u elr oct Ee I aswoth



: L10074 Syd u elr oct Ee I aswotks



Laboratory Duplicate (DUP) Report

Tde qcalnyC ReEyol yetD bar otayotC Mcplineaye tefets yo a tatBODIC selengeB netyalar otayotC spliry bar otayotC Bcplineayes ptomade netotDayoE tegatabreg DeydoB pterBance all saDple deyetogeEenyC Tde petDnyeB tatEges for yde Gelayme PetreEy MemaayonE (GPM) of bar otayotC Mcplineayes ate sperAfreB net VubS u eydoB Uh Nv 0/38 aEB ate BepeEBeEy oE yde DagEnycBe of tesclys net RoDpatrace y yde lemal of tepotyreg: Gescly H 10 yDes bQG:-Oo bnDnyeGesclyr eweeeE 10 allELO yDes bQG:- 0% - 50%kGescly> L0 yDes bQG:- 0% - L0%.

Scr-u aytn: WATER						Laboratory D	uplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005: pS (QC Lot:	2937310)								
v u 1306738-001	I h 18	v W005: px Valce		0.01	px ZEry	6.83	6.85	0.3	0% - F0%
v u 1306756-00L	WEOECD ocs	v W005: px Valce		0.01	px ZEry	5.95	5.95	0.0	0% - T0%
EA015: Total Dissolv	ved olids (QC Lot: 293V071)								
v u 13067L6-008	WEOECD ocs	v W015x : Toyal MissolmeB SolrBs @180°i		10	Dg/b	L18	CLL0	0.9	0% - T0%
v u 1306738-001	I h 18	v W015x : Toyal Missolme B SolrBs @180°i		10	Dg/b	15600	15400	1.5	%0 - F0%
ED037P: Alkalinity b	y PC Titrator (QC Lot: 29363	36)							
v u 13067L6-009	WEOECD ocs	v M037-P: Toyal WkalrEyCas i ai Q3		-	Dg/b	L18	L18	0.0	0% - T0%
v u 1306738-003	l h 40	v M037-P: Toyal WkalrEyCas i ai Q3		-	Dg/b	L01	198	1.1	0% - T0%
ED041G: ulfate (Tu	rbidimetric) as O4 28by DA	(QC Lot: 2936451)							
v u 1306738-001	I h 18	v M0411 : Sclfaye as SQ4 - Tctr nBnDeytnR	14808-79-8	٢	Dg/b	1L80	1300	0.9	%07 - %0
v u 1306756-00L	WEOECD ocs	v M0411 : Sclfaye as SQ4 - Tctr rBrD eytrR	14808-79-8	-	Dg/b	33	33	0.0	0% - T0%
ED045G: Chloride D	iscrete analyser (QC Lot: 29)	36449)							
v u 1306717-001	WEOECD ocs	v M0451 : i dlot nBe	16887-00-6	-	Dg/b	9860	9950	0.9	0% - T0%
v u 13067L6-001	WEOED ocs	v M0451 : i dlotnBe	16887-00-6	-	Dg/b	18	19	0.0	0% - 20%
ED045G: Chloride D	iscrete analyser (QC Lot: 29)	36453)							
v u 1306738-001	I h 18	v M0451 : i dlot nBe	16887-00-6	-	Dg/b	9710	9880	1.7	0% - T0%
v u 1306756-00L	WEOECD ocs	v M0451 : i dlotnBe	16887-00-6	-	Dg/b	354	355	0.0	0% - T0%
ED093F: Dissolved I	Major Cations (QC Lot: 29364	450)							
v u 13067L6-001	WEOED ocs	v M093F: i alRcD	7440-70-L	-	Dg/b	ę	4	0.0	Oo brDry
		v M093F: u agEesncD	7439-95-4	-	Dg/b	4	4	0.0	Oo brDry
		v M093F: SoBred	7440-L3-5	-	Dg/b	1L	1L	0.0	0% - 20%
		v M093F: PoyassrcD	7440-09-7	-	Dg/b	1	-	0.0	Oo brDry
v u 1306756-00L	WEOECD ocs	v M093F: i alRcD	7440-70-L	-	Dg/b	L4	L5	0.0	0% - T0%
		v M093F: u agEesncD	7439-95-4	-	Dg/b	L7	L7	0.0	0% - T0%
		v M093F: SoBred	7440-L3-5	-	Dg/b	18L	188	L.9	0% - F0%
		v M093F: PoyassrcD	7440-09-7	-	Dg/b	ω	8	0.0	Oo brDry
EG020F: Dissolved	Metals by ICP8M (QC Lot: 2	936513)							
v u 1306468-098	WEOECD ocs	vIOLOWF: i aBD cD	7440-43-9	0.0001	Dg/b	H0.0001	H0.0001	0.0	Oo brDry
		vI OLOWF: WiseErR	7440-38-L	0.001	Dg/b	H0.001	H0.001	0.0	Oo brDry
		v1 0L0WF: i or aly	7440-48-4	0.001	Dg/b	H0.001	H0.001	0.0	Oo brDry
		v1 0L0WF: i oppet	7440-50-8	0.001	Dg/b	H0.001	0.00L	7L.0	Oo brDry
		v1 0L0WF: beaB	7439-9L-1	0.001	Dg/b	H0.001	H0.001	0.0	Oo brDry
		v1 0L0WF: u aEgaEese	7439-96-5	0.001	Dg/b	H0.001	H0.001	0.0	Oo brDry
		v I OLOWF: ONRel	7440-0L-0	0.001	Dg/b	H0.001	H0.001	0.0	Oo brDry
		vI 0L0WF: ArER	7440-66-6	0.005	Dg/b	H0.005	H0.005	0.0	Oo brDry

Page h otk QtBet i IreEy PtojeRy	: 4 of 1L : v u 1306738 : v OVNGQOU v OTVb v WGTX : L10074 Syd u eiroctEe I as	Si NOi vS wotks							ALS
Scr-u aytn: WATER						Laboratory D	uplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved M	etals by ICP8M (QC Lot: 2	936513) 8continued							
v u 1306468-098	WEOECD ocs	vI OLOWF: WCD NERD	74L9-90-5	0.01	Dg/b	HD.01	H0.01	0.0	Oo brDry
		vI 0L0WF: SeleErCD	778L-49-L	0.01	Dg/b	H0.01	H0.01	0.0	Oo brDry
		vI 0L0WF: XotoE	7440-4L-8	0.05	Dg/b	H0.05	H0.05	0.0	Oo brDry
		VI OLOWFF: NOE	7439-89-6	0.05	Dg/b	H0.05	H0.05	0.0	Oo brDry
v u 1306685-001	WEOECD ocs	vI OLOWF: i aBD @D	7440-43-9	0.0001	Dg/b	H0.0001	H0.0001	0.0	Oo brDry
		vI OLOWF: WiseErR	7440-38-L	0.001	Dg/b	0.003	0.003	0.0	Oo brDry
		v1 0L0WF: i or aly	7440-48-4	0.001	Dg/b	0.006	0.006	0.0	Oo brDry
		vI 0L0WF: i oppet	7440-50-8	0.001	Dg/b	0.005	0.005	0.0	Oo brDry
		v1 0L0WF: beaB	7439-9L-1	0.001	Dg/b	H0.001	HD.001	0.0	Oo brDry
		v1 0L0WF: u aEgaEese	7439-96-5	0.001	Dg/b	0.140	0.146	4.0	%07 - %0
		vI 0L0WF: OnRel	7440-0L-0	0.001	Dg/b	0.0L4	0.0L4	0.0	0% - L0%
		vI OLOWF: ANER	7440-66-6	0.005	Dg/b	0.111	0.113	L.1	%07 - %0
		VI OLOWF: WCD HERCD	74L9-90-5	0.01	Dg/b	H0.01	H0.01	0.0	Oo brDry
		vI 0L0WF: SeleErcD	778L-49-L	0.01	Dg/b	0.03	0.03	0.0	Oo brDry
		vI 0L0WF: XotoE	7440-4L-8	0.05	Dg/b	0.L9	0.3L	8.7	Oo brDry
		VI OLOWF: NOE	7439-89-6	0.05	Dg/b	H0.05	H0.05	0.0	Oo brDry
EG020F: Dissolved M	etals by ICP8M (QC Lot: 2	:936515)							
v u 1306738-00L	I h 01	vI OLOWF: i aBD cD	7440-43-9	0.0001	Dg/b	0.0001	H0.0001	0.0	Oo brDry
		vI OLOWF: WiseErR	7440-38-L	0.001	Dg/b	0.478	0.503	5.0	0% - L0%
		v1 0L0WF: i oraly	7440-48-4	0.001	Dg/b	0.003	0.003	0.0	Oo brDry
		vI 0L0WF: i oppet	7440-50-8	0.001	Dg/b	0.00L	0.003	0.0	Oo brDry
		vI 0L0WF: beaB	7439-9L-1	0.001	Dg/b	H0.001	H0.001	0.0	Oo brDry
		v1 0L0WF: u aEgaEese	7439-96-5	0.001	Dg/b	0.L66	0.308	14.6	%07 - %0
		vI 0L0WF: OrtRel	7440-0L-0	0.001	Dg/b	0.056	0.058	3.0	0% - L0%
		vI OLOWF: ANER	7440-66-6	0.005	Dg/b	0.039	0.04L	7.6	Oo brDry
		VI OLOWF: WCDIECD	74L9-90-5	0.01	Dg/b	H0.01	H0.01	0.0	Oo brDry
		vI 0L0WF: SeleErcD	778L-49-L	0.01	Dg/b	HD.01	H0.01	0.0	Oo brDry
		vI 0L0WF: XotoE	7440-4L-8	0.05	Dg/b	1.37	1.37	0.0	0% - L0%
		VI OLOWFF: NOE	7439-89-6	0.05	Dg/b	L.76	L.88	4.5	0% - L0%
v u 1306756-001	WEOECD ocs	vI OLOWF: i aBD @D	7440-43-9	0.0001	Dg/b	H0.0001	H0.0001	0.0	Oo brDry
		vI OLOWF: WiseErR	7440-38-L	0.001	Dg/b	0.005	0.005	0.0	Oo brDry
		vI 0L0WF: i or aly	7440-48-4	0.001	Dg/b	0.001	0.001	0.0	Oo brDry
		v1 0L0WF: i oppet	7440-50-8	0.001	Dg/b	0.00L	0.00L	0.0	Oo brDry
		v1 0L0WF: beaB	7439-9L-1	0.001	Dg/b	H0.001	H0.001	0.0	Oo brDry
		v1 0L0WF: u aEgaEese	7439-96-5	0.001	Dg/b	0.3L6	0.351	7.4	0% - L0%
		vI 0L0WF: OrtRel	7440-0L-0	0.001	Dg/b	0.003	0.003	0.0	Oo brDry
		vI OLOWF: ANER	7440-66-6	0.005	Dg/b	0.007	0.006	0.0	Oo brDry
		v1 0L0WF: WcDrErcD	74L9-90-5	0.01	Dg/b	1.66	1.66	0.0	%07 - %0
		v1 0L0WF: SeleErcD	778L-49-L	0.01	Dg/b	H0.01	H0.01	0.0	Oo brDry
		v1 0L0WFF: XotoE	7440-4L-8	0.05	Dg/b	0.LL	0.LL	0.0	Oo brDry

Page ۲ otk QtBet	: 5 of 1L : vu 1306738								
r IreEy PtoieRv	 v OVNGQOU v OTVb v WGTx L10074 Svd u elr oct Ee 1 asv 	Si NOI vS works							ALS
Scr-u aytn: WATER					-	Laboratory Du	Iplicate (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 ICP8M (QC Lot: 29	936515) 8continued							
v u 1306756-001	WEOECD ocs	VI OLOWFF: NOE	7439-89-6	0.05	Dg/b	L0.5	LL.L	8.0	0% - L0%
EK026 F: Total CN	by egmented Flow Analyser	r (QC Lot: 2936567)							
v u 1306718-001	WEOECD ocs	v#0L6SF: Toyali CaErBe	57-1L-5	0.004	Dg/b	H0.004	H0.004	0.0	Oo brDry
v u 1306738-010	Mcp L	v#0L6SF: Toyal i CaEnBe	57-1L-5	0.004	Dg/b	0.018	0.017	0.0	Oo brDry
EK040P: Fluoride by	V PC Titrator (QC Lot: 293633	34)							
v u 1306701-00L	WEOECD ocs	v#040P: FlcotrBe	16984-48-8	0.1	Dg/b	0.3	0.3	0.0	Oo brDry
v u 1306738-003	l h 40	v#040P: FlcotrBe	16984-48-8	0.1	Dg/b	0.6	0.6	0.0	Oo brDry
EK055G: Ammonia	as N by Discrete Analyser(Q	iC Lot: 2936V60)							
v u 1306677-001	WEOECD ocs	v#0551:WDDoEma as O	7664-41-7	0.01	Dg/b	1.33	1.39	4.4	0% - L0%
v u 1306716-003	WEOECD ocs	v#0551: WDDoEmaas O	7664-41-7	0.01	Dg/b	0.08	0.08	0.0	Oo brDry
EK055G: Ammonia	as N by Discrete Analyser(Q	iC Lot: 2936V62)							
v u 1306738-005	I h 35	v#0551: WDDoEmaas O	7664-41-7	0.01	Dg/b	L.57	L.45	4.6	0% - L0%
EK057G: Nitrite as I	N by Discrete Analyser (QC L	Lot: 2936447)							
v u 1306716-001	WEOECD ocs	v#0571 : Onythe as O		0.01	Dg/b	0.01	0.01	0.0	Oo brDry
v u 1306756-00L	WEOECD ocs	v#0571 : Onythe as O		0.01	Dg/b	H0.01	H0.01	0.0	Oo brDry
EK071G: Reactive P	hosphorus as P by discrete a	analyser (QC Lot: 2936452)							
v u 1306738-001	I h 18	v#0711 : GeaRyme Pdospdotcs as P	14L65-44-L	0.01	Dg/b	H0.01	H0.01	0.0	Oo brDry
v u 1306756-00L	WEOECD ocs	v#0711 : GeaRyme Pdospdotcs as P	14L65-44-L	0.01	Dg/b	0.0L	0.0L	0.0	Oo brDry
EP074A: Monocyclid	c Aromatic Sydrocarbons (Q	C Lot: 2937477)							
v u 1306709-006	WEOECD ocs	v P074: XeEzeEe	71-43-L	-	q/brl	도	도	0.0	Oo brDry
		v P074: TolceEe	108-88-3		q/brl	Ŧ	Ŧ	0.0	Oo brDry
		v P074: v ydGr eEzeEe	100-41-4		d/brl	ᅱ	ᆛ	0.0	Oo brDry
		v P074: Deya- & pata-2 GeEe	108-38-3		q/brl	Ŧ	Ŧ	0.0	Oo brDry
			106-4L-3			:	:		
		v P074: otydo-2 GeEe	95-47-6		q/brl	Ŧ	Ŧ	0.0	Oo brDry
		v P074: SydeEe	100-4L-5	Q	q/brl	£	£	0.0	Oo brDry
		v P074: NsoptopOr eEzeEe	98-8L-8	Q	d/bu	£	£	0.0	Oo brDry
		v P074: E-PtopOr eEzeEe	103-65-1	5	d/bu	£	£	0.0	Oo brDry
		v P074: 1.3.5-TtmDeydGr eEzeEe	108-67-8	S	q/brl	H5	H5	0.0	Oo brDry
		v P074: seRXcyOr eEzeEe	135-98-8	വ	q/brl	H5	£	0.0	Oo brDry
		v P074: 1.L.4-TtrDeydGr eEzeEe	95-63-6	2	q/brl	H5	£	0.0	Oo brDry
		v P074: yetyXcyOr eEzeEe	98-06-6	2	q/brl	H5	£	0.0	Oo brDry
		v P074: p-Nsoptop0yolceEe	99-87-6	5	d/brl	£	£	0.0	Oo brDry
		v P074: E-XcyOr eEzeEe	104-51-8	2	q/brl	£	£	0.0	Oo brDry
v u 1306738-005	I h 35	v P074: XeEzeEe	71-43-L	~	q/brl	4	4	0.0	Oo brDry
		v P074: TolceEe	108-88-3		q/brl	Η	H	0.0	Oo brDry
		v P074: v yddr eEzeEe	100-41-4		q/brl	Η	H	0.0	Oo brDry
		v P074: Deya- & pata-2 GeEe	108-38-3		q/brl	Ŧ	Ŧ	0.0	Oo brDry
			106-4L-3						

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i IneEy	VOVNEQOU VOTVID V WGTX	c Si NOi vS							
PtojeRy	: L10074 Syd u elr oct Ee I as	swotks							(ALS)
Scr-u aytn: WATER						Laboratory L	uplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic	Aromatic Sydrocarbons (C	3C Lot: 2937477) 8continued							
v u 1306738-005	l h 35	v P074: otydo-2 GeEe	95-47-6	_	q/6rl	ч	Ŧ	0:0	Oo brDry
		v P074: S)CteEe	100-4L-5	5	q/brl	£	£	0.0	Oo brDry
		v P074: NsoptopCr eEzeEe	98-8L-8	5	q/brl	£	£	0.0	Oo brDry
		v P074: E-PtopOr eEzeEe	103-65-1	5	q/brl	£	£	0.0	Oo brDry
		v P074: 1.3.5-TtrD eydGr eEzeEe	108-67-8	5	q/brl	£	£	0.0	Oo brDry
		v P074: seRXcydr eEzeEe	135-98-8	5	q/brl	£	£	0.0	Oo brDry
		v P074: 1.L.4-TtrD eydGr eEzeEe	95-63-6	2	q/brl	£	H5	0.0	Oo brDry
		v P074: yetyXcy0r eEzeEe	98-06-6	2	q/brl	£	Ĥ	0.0	Oo brDry
		v P074: p-1%optopCyolceEe	99-87-6	5	q/brl	HB	H5	0.0	Oo brDry
		v P074: E-XcyΩr eEzeEe	104-51-8	5	q/brl	HB	H5	0.0	Oo brDry
EP074S: Naphthalen	e (QC Lot: 2937477)								
v u 1306709-006	WEOECD ocs	v P074: OapdydaleEe	91-L0-3	7	q/brl	ЪН	2Н	0:0	Oo brDry
v u 1306738-005	l h 35	v P074: OapdydaleEe	91-L0-3	7	q/brl	ЪН	Ъ	0.0	Oo brDry
EP0V0/071: Total Pet	roleum Sydrocarbons (QC	Lot: 29363V6)							
v u 1306717-001	WEOECD ocs	v P071:i 15 - i L8 FtaRyooE	-	100	q/brl	H100	H100	0.0	Oo brDry
		v P071:i 10 - i 14 FtaRyooE	-	50	q/brl	HEO	H50	0.0	Oo brDry
		v P071:i L9 - i 36 FtaRynoE	1	50	q/brl	H50	H50	0.0	Oo brDry
v u 1306738-001	I h 18	v P071:i 15 - i L8 FtaRynoE	1	100	q/brl	H100	H100	0.0	Oo brDry
		v P071:i 10 - i 14 FtaRynoE	1	50	q/brl	H50	H50	0.0	Oo brDry
		v P071:i L9 - i 36 FtaRynoE	1	50	q/brl	HBO	H60	0.0	Oo brDry
EP0V0/071: Total Pet	roleum Sydrocarbons (QC	Lot: 2937476)							
v u 1306709-006	WEOECD ocs	v P080:i 6 - i 9 FtaRyno E	1	ΓO	q/brl	HLO	HLO	0.0	Oo brDry
v u 1306738-005	I h 35	v P080:i 6 - i 9 Fta Ryno E		ΓO	q/brl	HLO	HLO	0.0	Oo brDry
EP0V0/071: Total Red	overable Sydrocarbons 8N	EPM 2010 Draft (QC Lot: 29363V6)							
v u 1306717-001	WEOECD ocs	v P071: >i 10 - i 16 FtaRyno E	1	100	q/brl	H100	H100	0.0	Oo brDry
		v P071: >i 16 - i 34 FtaRyno E	-	100	q/brl	H100	H100	0.0	Oo brDry
		v P071: >i 34 -i 40 FtaRynoE	-	100	q/brl	H100	H100	0.0	Oo brDry
vu 1306738-001	I h 18	v P071: >i 10 - i 16 FtaRynoE		100	q/brl	H100	H100	0.0	Oo brDry
		v P071:>i 16-i 34 FtaRynoE	-	100	q/brl	H140	H140	0.0	Oo brDry
		v P071: >i 34 - i 40 FtaRynoE		100	d/gu	H100	H100	0:0	Oo brDry
EP0V0/071: Total Red	overable Sydrocarbons 8N	IEPM 2010 Draft (QC Lot: 2937476)							
v u 1306709-006	WEOECD ocs	v P080: i 6 - i 10 FtaRyoE	1	L0	q/brl	HLO	HLO	0:0	Oo brDry
v u 1306738-005	l h 35	v P080: i 6 - i 10 FtaRyncE	1	L0	q/brl	HLO	HLO	0:0	Oo brDry

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h otk OtBet	· / U 1306738
i IneEv	· v OVNGOOU v OTVNb v MGTx Si N Oi v S
PtojeRy	L10074 Syd u eir oct Ee I aswotks



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

Tde qcalnyC RoEytol yetD u eydoB / bar otayotC XIaEk tefets yo aE aEalOye ftee Dayth yo wolnRN all teageEys ate aBBeB nE yde saDe molcDes of ptopotynoEs as cseB nE syaEBatB saDple ptepataynoE. Tde pctpose of ydns Ui pataDeyet ns yo DoEnot poveEynal lar otayotC RoEyaDnEaynoE Tde qcalnyC RoEytol yetD bar otayotC i oEytol SaDple (bi S) tefets yo a RetyfneB tefeteERe Dayetnal, ot a kEowE nEyetteeERe ftee Dayth sphkeB wnd yatgey a EalOes. Tde pctpose of ydrs Ui pataDeyet rs y DoEryot DeydoB pteRswE aEB arRCtaRCrEBepeEBeEyof saD ple Dayn. MCEaD in GeRometCbrD ins ate raseBoE syaysyreal emalcayon E of ptoResseB bi S.

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Scr-u atn : WATER				Method Blank (MB)		Laboratory Control Spike (L0	CS) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SCS	Том	High
EA015: Total Dissolved olids(QCLot: 293/071)								
v W015x : Toyal MtssolmeB Solites @180°i		10	Dg/b	H10	L000 Dg/b	100	98	104
ED037P: Alkalinity by PC Titrator (QCLot: 2936336)								
v M037-P: Toyal WkalrEnyCas i ai Q3		1	Dg/b		L00 Dg/b	98.4	91	105
ED041G: ulfate (Turbidimetric) as O4 28by DA (QCLot: 2	:936451)							
v M0411 : Sclfaye as SQ4 - Tctr rBrDeytirR	14808-79-8	1	Dg/b	Ŧ	L5 Dg/b	111	81	1L5
ED045G: Chloride Discrete analyser (QCLot: 2936449)								
v M0451 : i dlotrBe	16887-00-6	٢	Dg/b	Ŧ	1000 Dg/b	109	89	117
ED045G: Chloride Discrete analyser (QCLot: 2936453)								
v M0451 : i dlotriBe	16887-00-6	-	Dg/b	Н	1000 Dg/b	110	89	117
ED093F: Dissolved Major Cations (QCLot: 2936450)								
v M093F: i alRcD	7440-70-L	-	Dg/b	도	5 Dg/b	105	83	1L9
v M093F: u agEesroD	7439-95-4	-	Dg/b	Н	5 Dg/b	10L	80	1L4
v M093F: SoBreD	7440-L3-5	-	D g/b	H	50 Dg/b	94.7	77	1L5
v M093F: PoyassneD	7440-09-7	~	Dg/b	£	50 Dg/b	95.L	77	1L3
EG020F: Dissolved Metals by ICP8M (QCLot: 2936513)								
VI OLOWF: WCDRED	74L9-90-5	0.01	Dg/b	H0.01	0.5 Dg/b	99.4	06	110
VI OLOWF: WiseErR	7440-38-L	0.001	Dg/b	H0.001	0.1 Dg/b	99.6	93	109
vI OLOWF: i aBDmD	7440-43-9	0.0001	Dg/b	HD.0001	0.1 Dg/b	97.L	85	111
v1 OLOWF: i or aly	7440-48-4	0.001	Dg/b	H0.001	0.1 Dg/b	99.4	87	111
vI 0L0WF: i oppet	7440-50-8	0.001	Dg/b	H0.001	0.1 Dg/b	95.4	86	110
vI 0L0WF: beaB	7439-9L-1	0.001	Dg/b	H0.001	0.1 Dg/b	10L	88	11L
v1 0L0WF: u aEgaEese	7439-96-5	0.001	Dg/b	H0.001	0.1 Dg/b	98.4	86	110
VI OLOWF: ONRel	7440-0L-0	0.001	Dg/b	H0.001	0.1 Dg/b	97.3	86	11L
VI OLOWF: SeleErrD	778L-49-L	0.01	Dg/b	H0.01	0.1 Dg/b	97.0	85	111
VI OLOWF: ANER	7440-66-6	0.005	Dg/b	HD.005	0.1 Dg/b	9F.6	83	113
v I 0L0WF: XotoE	7440-4L-8	0.05	Dg/b	H0.05	0.1 Dg/b	10L	۲L	1L6
VI OLOWFF: NOE	7439-89-6	0.05	Dg/b	H0.05	0.5 Dg/b	98.9	88	11L
EG020F: Dissolved Metals by ICP8M (QCLot: 2936515)								
VI OLOWF: WCDRED	74L9-90-5	0.01	Dg/b	H0.01	0.5 Dg/b	99.3	90	110
VI OLOWF: WISELR	7440-38-L	0.001	Dg/b	H0.001	0.1 Dg/b	99.7	93	109
vI OLOWF: i aBD CD	7440-43-9	0.0001	Dg/b	HD.0001	0.1 Dg/b	97.9	85	111
v1 0L0WF: i or aly	7440-48-4	0.001	D g/b	H0.001	0.1 Dg/b	99.8	87	111
vI 0L0WF: i oppet	7440-50-8	0.001	Dg/b	H0.001	0.1 Dg/b	96.6	86	110
vI 0L0WF: beaB	7439-9L-1	0.001	Dg/b	HD.001	0.1 Dg/b	99.3	88	11L

Page h otk QtBet i IreEy PtojeRy	: 8 of 1L : vu 1306738 : v OVNGQOu v OTVb v NGTx Si N Oi v S : L10074 Syd u elr octEe 1 aswotks								PLS
Scr-III avtn • WATER					Method Blank (MB)		Laboratory Control Spike (LC	S) Report	
					Report	Spike	Spike Recovery (%)	Recovery	-imits (%)
Method: Compound		CAS Number	LOR	Unit	Result	Concentration	TCS	Том	High
EG020F: Dissolved M	etals by ICP8M (QCLot: 2936515) 8con	ntinued							
v1 0L0WF: u aEgaEese		7439-96-5	0.001	Dg/b	HD.001	0.1 Dg/b	96.8	86	110
v I 0L0WF: Orrkel		7440-0L-0	0.001	Dg/b	HD.001	0.1 Dg/b	99.3	86	11L
v I OLOWF: SeleErcD		778L-49-L	0.01	Dg/b	H0.01	0.1 Dg/b	94.1	85	111
VI OLOWF: ANER		7440-66-6	0.005	Dg/b	HD.005	0.1 Dg/b	9T.6	83	113
v I 0L0WF: XotoE		7440-4L-8	0.05	Dg/b	HD.05	0.1 Dg/b	107	7L	1L6
VI OLOWF: NOE		7439-89-6	0.05	Dg/b	H0.05	0.5 Dg/b	9.66	88	11L
EK026 F: Total CN b	y egmented Flow Analyser(QCLot: 29	336567)							
v#0L6SF:Toyali CaEnBe		57-1L-5	0.004	Dg/b	HD.004	0.L Dg/b	81.9	75	113
EK040P: Fluoride by F	PC Titrator (QCLot: 2936334)								
v #040P: FlcotrBe		16984-48-8	0.1	Dg/b	H0.1	5 Dg/b	96.0	78	1L0
EK055G: Ammonia as	N by Discrete Analyser (QCLot: 2936Ve	(00)							
v # 0551 : WD Do Ena as O		7664-41-7	0.01	Dg/b	H0.01	1.0 Dg/b	104	76	1LL
EK055G: Ammonia as	N by Discrete Analyser (QCLot: 2936Ve	62)							
v#0551:WDD0EnatasO		7664-41-7	0.01	Dg/b	H0.01	1.0 Dg/b	100	76	1LL
EK057G: Nitrite as N	by Discrete Analyser(QCLot: 2936447)								
v#0571:Onytnye as O			0.01	Dg/b	H0.01	0.5 Dg/b	95.1	84	11L
EK071G: Reactive Ph	osphorus as P by discrete analyser(QC	CLot: 2936452)							
v#0711:GeaRymme Pdosp	dotcs as P	14L65-44-L	0.01	Dg/b	H0.01	0.5 Dg/b	101	84	108
EP074A: Monocyclic	Aromatic Sydrocarbons (QCLot: 293747	(77							
v P074: XeEzeEe		71-43-L	÷	q/brl	도	L0 µg/b	101	76	1LL
v P074: TolceEe		108-88-3	_	d/brl	Η	L0 µg/b	91.9	79	1L3
v P074: v yd0r eEzeEe		100-41-4	_	d/gu	Η	L0 µg/b	88.4	76	118
v P074: Deya- & pata-20	eEe	108-38-3 106-41 -3	_	q/brl	Ŧ	40 µg/b	87.0	75	1L1
v P074: SydteEe		100-4L-5	5	d/br	£	L0 µg/b	8L.L	71	118
v P074: otydo-2 GeEe		95-47-6		q/6rl	Ŧ	L0 µg/b	93.7	80	1L0
v P074: NsoptopOr eEzeE€		98-8L-8	5	d/brl	H5	L0 µg/b	97.3	71	119
v P074: E-PtopOr eEzeEe		103-65-1	5	d/gu	H5	L0 µg/b	90.5	69	113
v P074: 1.3.5-TthDeydGr e	€zeEe	108-67-8	Q	q/brl	£	L0 µg/b	84.6	70	114
v P074: seR-XcyGr eEzeE	0	135-98-8	Q	q/brl	£	L0 µg/b	91.8	71	115
v P074: 1.L.4-TthDeydGr e	EzeEe	95-63-6	Q	q/brl	£	L0 µg/b	83.8	70	114
v P074: yety-XcyOr eEzeEe		98-06-6	Q	q/brl	£	L0 µg/b	89.7	٦L	114
v P074: p-NoptopOyolceE	5	99-87-6	5	d/gu	H5	L0 µg/b	86.7	68	114
v P074: E-XcyGr eEzeEe		104-51-8	5	d/gu	£	L0 µg/b	85.0	61	115
EP074S: Naphthalene	(QCLot: 2937477)								
v P074: OapdydaleEe		91-L0-3	7	d/bµ	Ч	L0 µg/b	87.L	75	1L1
EP0V0/071: Total Petr	oleum Sydrocarbons (QCLot: 29363V6)								
v P071:i 10-i 14 FtaRyn	ÞE	-	50	d/gц	H50	3610 µg/b	87.9	46	1L6



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Page	: 9 of 1L
h otk QtBet	: vu 1306738
i IneEy	: V OVNGQOU V OTVID V NGTX SI N OI V S
PtojeRy	: L10074 Syd u elroctEe I aswotks

Scr-u ayn: WATER			Method Blank (MB)		Laboratory Control Spike (LCS	() Report	
			Report	Spike	Spike Recovery (%)	Recovery I	imits (%)
Method: Compound CAS Numbe	Ir LOR	Unit	Result	Concentration	rcs	Том	High
EP0V0/071: Total Petroleum Sydrocarbons (QCLot: 29363V6) 8 continu	led						
v P071:i 15-i L8 Ftargone	100	q/6rl	H100	10340 µg/b	99.4	55	1L5
v P071:i L9-i 36 FtaRyorE	50	d/brl	H50	3790 µg/b	104	55	1L9
EP0V0/071: Total Petroleum Sydrocarbons (QCLot: 2937476)							
v P080:i 6 - i 9 FtaRyno E	FO	q/brl	HLO	360 µg/b	100	60	1L6
EP0\0/071: Total Recoverable Sydrocarbons 8NEPM 2010 Draft (QCLo	ıt: 29363V6)						
v P071: >i 10 - i 16 FtaRyonE	100	d/brl	H100	5070 µg/b	98.L	53	1L9
v P071: >i 16 - i 34 FtaRyonE	100	d/brl	H100	11L30 µg/b	106	56	13L
v P071:>i 34 - i 40 FtaRyonE	100	d/brl	H100	1010 µg/b	100	51	137
EP0\0/071: Total Recoverable Sydrocarbons 8NEPM 2010 Draft (QCLo	ıt: 2937476)						
v P080:i 6 - i 10 FtaRyno E	- FO	q/brl	HLO	450 µg/b	96.8	56	130

Matrix Spike (MS) Report

В pataDeyet ns yo DoEryot poyeEynal Dayth efferBys Matrix Spike (MS) Report Tde qcalnyC RoExtol yetD u ayth Spitke (u S) tefets yo a ErExtalarotayotC spliry saDple spitkeB wind a tepteseExaymme sey of yatgey aEalQes. Tde pctpose of ydns Ui a EalQe teRometres. SyayRGeRometConDinys as pet larotayotCMaya UcalnyCQr jeRymmes (MUQs). Naeal teRometCtaEges syayeBDaCr e wammeBrEyde emeEyof saDple Dayth rEyetfeteERe. Scr-u avtn: WATER

				Spike	SpikeRecovery(%)	Recovery Li	nits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	SM	том	High	
ED041G: ulfate (Turbidimetric) as O4 28by DA(QCLot: 2936451)							
v u 1306738-004	I h L8	v M0411 : Sclfaye as SQ4 - TctrrBrDeytrR	14808-79-8	10 Dg/b	= Ooy MeyetDrEeB	20	130	
ED045G: Chloride	Discrete analyser (QCLot: 2936449)							
v u 1306717-00L	WE0ED ocs	v M0451 : i dlotiBe	16887-00-6	400 Dg/b	= Ooy MeyetDrEeB	20	130	
ED045G: Chloride	Discrete analyser (QCLot: 2936453)							
v u 1306738-004	I h L8	v M0451 : i dlotrBe	16887-00-6	400 Dg/b	106	70	130	_
EG020F: Dissolved	d Metals by ICPBM (QCLot: 2936513)							
v u 1306468-098	WEOECD ocs	vI OLOWF: WiseErR	7440-38-L	0.L Dg/b	107	89	139	
		vI OLOWF: i aBD to D	7440-43-9	0.05 Dg/b	113	75	131	
		v1 0L0WF: i or aly	7440-48-4	0.L Dg/b	113	77	1L9	_
		v I 0L0WF: i oppet	7440-50-8	0.L Dg/b	110	71	1L7	_
		v1 0L0WF: beaB	7439-9L-1	0.L Dg/b	95.5	71	1L3	_
		v1 0L0WF: u aEgaEese	7439-96-5	0.L Dg/b	11L	66	13L	_
		vI OLOWF: ONRel	7440-0L-0	0.L Dg/b	111	73	1L9	_
		v I OLOWF: ANER	7440-66-6	0.L Dg/b	107	68	136	
EG020F: Dissolved	d Metals by ICPBM (QCLot: 2936515)							
v u 1306738-00L	I h 01	VI OLOWF: WeenR	7440-38-L	0.L Dg/b	101	89	139	_

Page h otk QtBet	: 10 of 1L : vu 1306738						-
i IneEy PtojeRy	: v OVNGQOU v OTWb v WGTx Si N Oi v S : L10074 Syd u elr octEe I aswotks						ALS
Scr-u ayn: WATER				Ma	ttrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery Li	mits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	SW	том	High
EG020F: Dissolved	I Metals by ICP8M (QCLot: 2936515) 8continued						
v u 1306738-00L	l h 01	vI OLOWF: i aBDrcD	7440-43-9	0.05 Dg/b	113	75	131
		v1 0L0WF: i or aly	7440-48-4	0.L Dg/b	113	77	1L9
		v1 0L0WF: i oppet	7440-50-8	0.L Dg/b	109	71	1L7
		v1 0L0WF: beaB	7439-9L-1	0.L Dg/b	114	71	1L3
		v1 0L0WF: u aEgaEese	7439-96-5	0.L Dg/b	99.L	66	13L
		vI OLOWF: ONRel	7440-0L-0	0.L Dg/b	113	73	1L9
		vI OLOWF: ANER	7440-66-6	0.L Dg/b	1L6	68	136
EK026 F: Total CI	N by egmented Flow Analyser (QCLot: 2936567)						
v u 1306718-00L	WEOED ocs	v#0L6SF: Toyali CaErBe	57-1L-5	0.L Dg/b	= 65.L	70	130
EK040P: Fluoride b	oy PC Titrator (QCLot: 2936334)						
v u 1306699-001	WEOECD OCS	v#040P: FlcotiBe	16984-48-8	5.0 Dg/b	10L	70	130
EK055G: Ammonia	as N by Discrete Analyser(QCLot: 2936V60)						
v u 1306677-00L	WEOECD OCS	v#0551 : WD DoEar as O	7664-41-7	1.0 Dg/b	118	70	130
EK055G: Ammonia	as N by Discrete Analyser (QCLot: 2936V62)						
v u 1306738-006	I h LL	v#0551 : WD DoEra as O	7664-41-7	1.0 Dg/b	96.7	70	130
EK057G: Nitrite as	N by Discrete Analyser(QCLot: 2936447)						
v u 1306717-00L	WEOECD OCS	v#0571 : Onytrije as O		0.5 Dg/b	100	70	130
EK071G: Reactive	Phosphorus as P by discrete analyser (QCLot: 293645						
v u 1306738-004	I h L8	v#0711 : GeaRyme Pdospdotcs as P	14L65-44-L	0.5 Dg/b	99.4	70	130
EP074A: Monocyc	iic Aromatic Sydrocarbons (QCLot: 2937477)						
v u 1306738-001	l h 18	v P074: XeEzeEe	71-43-L	L0 µg/b	96.7	64	1L1
		v P074: TolceEe	108-88-3	L0 µg/b	90.4	63	1L5
EP0V0/071: Total P	etroleum Sydrocarbons (QCLot: 29363V6)						
v u 1306738-00L	1 h 01	v P071: i 10 - i 14 FtaRwE	-	3610 µg/b	109	40	130
		vP071:i 15 - i L8 FtaRyonE		10340 µg/b	115	51	145
		v P071: i L9 - i 36 FtaRynoE		3790 µg/b	119	5L	144
EP0V0/071: Total P	etroleum Sydrocarbons (QCLot: 2937476)						
v u 1306738-001	l h 18	v P080: i 6 - i 9 FtaRynoE		L80 µg/b	71.L	46	1L6
EP0V0/071: Total R	ecoverable Sydrocarbons 8NEPM 2010 Draft (QCLot: 2	9363V6)					
v u 1306738-00L	I h 01	v P071: >i 10 -i 16 FtaRynoE		5070 µg/b	119	46	14L
		v P071: >i 16 -i 34 FtaRynoE	-	11L30 µg/b	11L	5L	146
		v P071: >i 34 -i 40 FtaRynoE	1	1010 µg/b	115	49	143
EP0V0/071: Total R	ecoverable Sydrocarbons 8NEPM 2010 Draft (QCLot: 2	937476)					
v u 1306738-001	l h 18	v P080: i 6 - i 10 FtaRynoE		330 µg/b	70.4	45	1L7

11 of 1L	v u 1306738	V OVNGQOU V OTVND V VVGTX SI N OI V S	L10074 Syd u elr octEe I aswotks
Page :	h otk QtBet :	i IneEy :	PtojeRy :



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

Tde qcalnyc Rostiol yetD u ayn Spike (u S) aEB u ayn Spike McpinRaye (u SM) tefets yo ncyalar otayotC spliry saDples spikeB wnyd a tepteseEjaymme sey of yatgey aEalOjes. Tde pctpose of ydese Ui pataDeyets ate yo DoEyot poyeEyaal Dayn effers o E aEalOje teRometres. SyayRGeRometCbnDrys as pet lar otayotCMaya U calnyCOrjeRymes (MUQs). Neeal teRometCtaEges syayBDaCre wanneb Fic yde emeEyof saDple Dayn ncyetfeteERe.

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

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				Spike	Spike Reco	very (%)	Recovery L	imits (%)	RPDS	(%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	SM	MSD	Том	High	Value	Control Limit
EK040P: Fluoride by	y PC Titrator(QCLot: 2936334)									
v u 1306699-001	WEOECD ocs	v #040P: FlcotnBe	16984-48-8	5.0 Dg/b	10L		20	130		-
EP0V0/071: Total Pe	stroleum Sydrocarbons (QCLot: 29363V6									
v u 1306738-00L	1 h 01	vP071:i 10 - i 14 FtaRynoE		3610 µg/b	109		40	130		-
		v P071: i 15 - i L8 FtaRynoE		10340 µg/b	115		51	145		1
		v P071: i L9 - i 36 FtaRwE		3790 µg/b	119		5L	144	-	1
EP0V0/071: Total Re	ecoverable Sydrocarbons 8NEPM 2010 D	raft (QCLot: 29363V6)								
v u 1306738-00L	1 h 01	v P071: >i 10 - i 16 FtaRynoE	-	5070 µg/b	119		46	14L	1	1
		v P071: >i 16 - i 34 FtaRynoE		11L30 µg/b	1LL		5L	146	-	-
		v P071: >i 34 - i 40 FtaRynoE		1010 µg/b	115		49	143	-	1
EK057G: Nitrite as	N by Discrete Analyser (QCLot: 2936447									
v u 1306717-00L	WEOECD ocs	v#0571 : Onythe as O		0.5 Dg/b	100		70	130	-	1
ED045G: Chloride D	0 iscrete analyser (QCLot: 2936449)									
vu 1306717-00L	WEOED ocs	v M0451 : i dlotrBe	16887-00-6	400 Dg/b	= Ooy		70	130		1
			_		MeyetD nEeB					
ED041G: ulfate (Tu	urbidimetric) as O4 28by DA (QCLot: 29	336451)								
v u 1306738-004	I h L8	v M0411 : Scifaye as SQ4 - Tctr rBiD eyirR	14808-79-8	10 Dg/b	= Ooy		70	130		
EK071G: Reactive F	hosphorus as P by discrete analyser (Q	CLot: 2936452)								
v u 1306738-004	1 h L8	v#0711 : GeaRyme Pdospdotcs as P	14L65-44-L	0.5 Dg/b	99.4		20	130	1	1
ED045G: Chloride D	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0									
v u 1306738-004	I h L8	v M0451 : i dlotrBe	16887-00-6	400 Dg/b	106		20	130		-
EG020F: Dissolved	Metals by ICP8M (QCLot: 2936513)									
v u 1306468-098	WEOECD ocs	vI OLOWF: WiseErr	7440-38-L	0.L Dg/b	107		89	139		
		vI OLOWF: i aBD CD	7440-43-9	0.05 Dg/b	113		75	131		-
		v1 0L0WFF: i or aly	7440-48-4	0.L Dg/b	113		77	1L9		
		v1 0L0WF: i oppet	7440-50-8	0.L Dg/b	110		71	1L7		-
		v1 0L0WF: beaB	7439-9L-1	0.L Dg/b	95.5		71	1L3		
		v1 0L0WF: u aEgaEese	7439-96-5	0.L Dg/b	11L		66	13L		
		v1 0L0WFF: Ontrel	7440-0L-0	0.L Dg/b	111		73	1L9		-
		VI OLOWF: ANER	7440-66-6	0.L Dg/b	107		68	136	1	1
EG020F: Dissolved	Metals by ICP8M (QCLot: 2936515)									
v u 1306738-00L	1 h 01	vI OLOWF: WiseErR	7440-38-L	0.L Dg/b	101		89	139	1	1
		vI 0L0WF: i aBD CD	7440-43-9	0.05 Dg/b	113		75	131		1

age	: 1L of 1L
n otk QtBet	: vu 1306738
IneEy	: V OVNGQOU V OTVID V WGTX SI N OI V S
^o tojeRy	: L10074 Syd u elr oct Ee I aswotks



Scr-u ayŋ: WATER					Matrix Spike (M	S) and Matrix Spik	ce Duplicate (M	ISD) Report		
				Spike	Spike Rec	overy (%)	Recovery Lin	mits (%)	RPDs	(%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	SW	USD	Low	High	Value	Control Limit
EG020F: Dissolved	Metals by ICP8M (QCLot: 2936515) 8co	pntinued								
v u 1306738-00L	I h 01	v1 0L0WF: i or aly	7440-48-4	0.L Dg/b	113	-	77	1L9		ł
		vI OLOWF: i oppet	7440-50-8	0.L Dg/b	109		71	1L7		1
		vI OLOWF: beaB	7439-9L-1	0.L Dg/b	114	-	71	1L3	1	l
		v1 0L0WF: u aEgaEese	7439-96-5	0.L Dg/b	99.L	-	66	13L		-
		vI OLOWF: Orthel	7440-0L-0	0.L Dg/b	113		73	1L9		1
		VI OLOWF: ANER	7440-66-6	0.L Dg/b	1L6	-	68	136	1	l
EK026 F: Total CN	by egmented Flow Analyser (QCLot: 2	936567)								
v u 1306718-00L	WEOED ocs	v#0L6SF:Toyali CaEnBe	57-1L-5	0.L Dg/b	= 65.L	1	70	130	1	ł
EK055G: Ammonia	as N by Discrete Analyser(QCLot: 2936V	V60)								
v u 1306677-00L	WEOECD ocs	v#0551 : WDD o Ena as O	7664-41-7	1.0 Dg/b	118		70	130	-	-
EK055G: Ammonia	as N by Discrete Analyser(QCLot: 2936V	V62)								
v u 1306738-006	I P LL	v # 0551 : WDD o Ena as O	7664-41-7	1.0 Dg/b	96.7		70	130	-	1
EP0V0/071: Total Pe	etroleum Sydrocarbons(QCLot: 2937476)									
v u 1306738-001	I h 18	v P080: i 6 - i 9 FtarByno E		L80 µg/b	71.L		46	1L6		
EP0V0/071: Total Re	acoverable Sydrocarbons 8NEPM 2010 Dr	raft (QCLot: 2937476)								
v u 1306738-001	I h 18	v P080: i 6 - i 10 FtaRyno E		330 µg/b	70.4		45	1L7		
EP074A: Monocycli	c Aromatic Sydrocarbons (QCLot: 29374	477)								
v u 1306738-001	I h 18	v P074: XeEzeEe	71-43-L	L0 µg/b	96.7		64	1L1		
		v P074: TolceEe	108-88-3	L0 µg/b	90.4	1	63	1L5		

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INTERPRETIVE QUALITY CONTROL REPORT

Work Order	:EM130673	Page	: 1 of 10
Client Contact Address	: ENVIRONMENTAL EARTH SCIENCES : REGIN ORQUIZA : P.O.BOX 2253 FOOTSCRAY VIC, AUSTRALIA 3011	Laboratory Contact Address	: Environmental Division Melbourne : Carol Walsh : 4 Westall Rd Springvale VIC Australia 3171
E-mail	: rorquiza@eesi.biz	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 96871666	Telephone	: +61-3-8549 9608
=acsimile	: +61 03 96871844	Facsimile	: +61-3-8549 9601
Project Site	: 210074 Sth Melbourne Gasworks	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
C-O-C number		Date Samples Received	: 25-JUN-2013
Sampler		Issue Date	: 01-JUL-2013
Order number	:	No. of samples received	: 10
Quote number	: ME/330/13	No. of samples analysed	: 10

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

This Interpretive Quality Control Report contains the following information:

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

 - Summary of Outliers

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Client	ENVIRONMENTAL EARTH SCIENCES
Project	210074 Sth Melbourne Gasworks



Analysis Holding Time Compliance

for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no Sample date The following report summarises ektraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of ektraction or analysis and precludes subsequent ektraction / digestion is involved or period from ektraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. the Summary of Outliers. analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the These soil holding times are: Organics (14 days)x Mercury (28 days); other metals (180 days). A recorded breach therefore does not leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days)x Mercury (28 days); other metals (180 days). A recorded breach therefore does Holding times for leachate methods (eKcluding elutriates) vary according to the guarantee a breach for all non-volatile parameters.

Evaluation: 🗴 & Holding time breach x 🗸 & Within holding time. Evaluation > > > > > > Due for analysis 25-JUN-2013 02-JUL-2013 09-JUL-2013 23-JUL-2013 23-JUL-2013 02-JUL-2013 Analysis 27&JUN 2013 27&JUN 2013 25&JUN22013 26&JUN22013 26&UN2013 26&UN22013 Date analysed Evaluation Date extracted Due for extraction Extraction / Preparation 09-JUL-2013 02-JUL-2013 23-JUL-2013 23-JUL-2013 02-JUL-2013 * 8 88 8 88 88 258JUN 2013 258JUN 2013 25&UN 2013 258JUN 2013 25&JUN 2013 258JUN 2013 Sample Date GW28, GW28, GW01, GW28, GW28, GW22 GW28, GW28, GW22 GW22 GW01, GW22 GW22 GW01, GW01, GW22 GW01, GW01, ED041G: Sulfate (Turbidimetric) as SO4 28by DA Clear Plastic Bottle 8Natural (ED041G) Clear Plastic Bottle 8Natural (ED0378P) Clear Plastic Bottle 8Natural (EA015+) Clear Plastic Bottle 8Natural (ED045G) Clear Plastic Bottle 8Natural (ED093F) Clear Plastic Bottle 8Natural (EA005) ED045G: Chloride Discrete analyser ED093F: Dissolved Major Cations ED037P: Alkalinity by PC Titrator EA015: Total Dissolved Solids Container / Client Sample ID(s) Matrik: WATER EA005: p+ GW40, GW35, GW18, GW35, GW40, GW35, GW35, GW18, GW35, GW40, GW18, GW40, GW18, GW40, GW35, GW40, GW18, GW18, Method

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Matrik: WATER						Evaluation:	× & Holding time t	oreach x ✓ & Within	holding time.
Method			Sample Date	Ext	iraction / Preparation			Analysis	
Container / Client Sample IL	(s)(Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metal	s by ICP8MS								
Clear Plastic Bottle 8Nitric GW18.	: Acid; Filtered (EG020A B)	GW01.	25&JUN 2013	₿	22-DEC-2013		27&JUN22013	22-DEC-2013	>
GW40,		GW28,							•
GW35,		GW22,							
Z dnu									
EK026SF: Total CN by S	egmented Flow Analyser								
White Plastic Bottle8NaO+	(EK026SF)	GW35	258JUN 2013	æ	09-JUL-2013		268JUN 2013	09-JUL-2013	
Dup 2		5]					>
White Plastic Bottle8NaO+	8Pb Acetate (EK026SF)								
GW01,		GW40,	258JUN 2013	₿	09-JUL-2013	1	26&UN2013	09-JUL-2013	>
GWZ0,		GWZZ							
EK040P: Fluoride by PC	Titrator								
Clear Plastic Bottle 8Natu	ral (EK040P)			ų					
GW18,		GW01,	25&JUN &013	8	23-JUL-2013	-	26&JUN&013	23-JUL-2013	>
GW40, GW35		GW28, GW22							
94930,		00022							
EK055G: Ammonia as N	by Discrete Analyser								
Glear Plastic Bottle 8Sulft GW18	iric Acid (EK055G)	GW01	258JUN 2013	8	23-JUL-2013		278JUN22013	23-JUL-2013	7
GW40.		GW28.							
GW35,		GW22							
EK057G: Nitrite as N by	Discrete Analyser								
Clear Plastic Bottle 8Natu	ral (EK057G)		0,000,000	Į			0100010000		
GW18,		GW01,	258JUN22013	8	51.0Z-NDC-12		258JUN22013	51.0Z-NDC-12	>
GW40,		GW28,							
GW35,		GW22							
EK071G: Reactive Phosp	horus as P by discrete analyser								
Clear Plastic Bottle 8Natu	ral (EK071G)			ŧ					
GW18,		GW01,	51020ND1262	8	CINZ-NDC-12		51U20NUG2	CI 07-NDC-17	>
GW40,		GW28,							
GW35,		GW22							

>

05-AUG-2013

27&JUN22013

5

02-JUL-2013

26&JUN 2013

258JUN 2013

GW01, GW28, GW22, Dup 2

EP0] 0/071: Total Recoverable + ydrocarbons 8NEPM 2010 Draft Amber Glass Bottle 8Unpreserved (EP071) GW01, GW18, GW28, GW35, GW25, GW22, Rinsate 2, Dup 2

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Matrik: WATER					Evaluation:	× & Holding time t	oreach x ✓ & Within	holding time
Method		Sample Date	ш	xtraction / Preparation			Analysis	
Container / Client Sam	tple ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic	: Aromatic + ydrocarbons							
Amber VOC Vial 8Sult	lfuric Acid (EP074)							
GW18,	GW01,	25&JUN 2013	26&JUN 2013	09-JUL-2013	>	27&JUN22013	09-JUL-2013	>
GW40,	GW28,							
GW35,	GW22,							
Rinsate 2,	Trip 2,							
Trip 3,	Dup 2							
EP074+: Naphthalen	P							
Amber VOC Vial 8Sul	lfuric Acid (EP074)							
GW18,	GW01,	258JUN22013	26&JUN 2013	09-JUL-2013	>	27&JUN 2013	09-JUL-2013	>
GW40,	GW28,							
GW35,	GW22,							
Rinsate 2,	Trip 2,							
Trip 3,	Dup 2							
EP0 0/071: Total Red	coverable + ydrocarbons 8NEPM 2010 Draft							
Amber VOC Vial 8Sult	lfuric Acid (EP0 0)							
GW18,	GW01,	25&JUN 2013	26&JUN 2013	09-JUL-2013	>	27&JUN22013	09-JUL-2013	>
GW40,	GW28,							
GW35,	GW22,							
Rinsate 2	Din 2							

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Quality Control Parameter Frequency Compliance

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

Matrik: WATER

Evaluation: × & Quality Control frequency not within specification x / & Quality Control frequency within specification.

Quality Control Sample Type		റ്റ	unt		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	15	13.3	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	E=055G	ო	26	11.5	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	4	30	13.3	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	33	12.1	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Fluoride by PC Titrator	E=040P	2	17	11.	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOK) by Discrete Analyser	E=059G	2	10	20.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	E=057G	2	19	10.5	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Hd	EA005	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	E=071G	2	12	16.7	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	16	12.5	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	E=026SF	2	16	12.5	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)	EA015H	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	19	10.5	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	17	11.	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	15	13.3	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	-	15	6.7	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	E=055G	2	26	7.7	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	4	30	13.3	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	33	6.1	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Fluoride by PC Titrator	E=040P	-	17	5.9	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOK) by Discrete Analyser	E=059G	÷	10	10.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	E=057G	-	19	5.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	E=071G	-	12		5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	-	16	6.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	E=026SF	-	16	6.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)	EA015H	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	-	19	5.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	-	17	5.9	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	-	15	6.7	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Ammonia as N by Discrete analyser	E=055G	2	26	7.7	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	30	6.7	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	33	6.1	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

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Matrik: WATER				Evaluation	: × & Quality Co	ntrol frequency n	ot within specification x \checkmark & Quality Control frequency within specification.
Quality Control Sample Type		S S	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	oc	Reaular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	E=040P	÷	17	5.9	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOK) by Discrete Analyser	E=059G	-	10	10.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	E=057G	÷	19	5.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	E=071G	-	12	<u>.</u>	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	-	16	6.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	E=026SF	-	16	6.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)	EA015H	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	-	19	5.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	-	17	5.9	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	-	15	6.7	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
MatriK Spikes (MS)							
Ammonia as N by Discrete analyser	E=055G	2	26	7.7	5.0	>	ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	30	6.7	5.0	>	ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	33	6.1	5.0	>	ALS QCS3 requirement
Fluoride by PC Titrator	E=040P	-	17	5.9	5.0	>	ALS QCS3 requirement
Nitrite and Nitrate as N (NOK) by Discrete Analyser	E=059G	-	10	10.0	5.0	>	ALS QCS3 requirement
Nitrite as N by Discrete Analyser	E=057G	~	19	5.3	5.0	>	ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	E=071G	Ţ	12	<u></u>	5.0	>	ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	Ţ	16	6.3	5.0	>	ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	E=026SF	÷	16	6.3	5.0	>	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	Ţ	19	5.3	5.0	>	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	Ţ	17	5.9	5.0	>	ALS QCS3 requirement
Volatile Organic Compounds	EP074	÷	15	6.7	5.0	>	ALS QCS3 requirement

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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 metho	ds have been developed a	are provided within	the Method Descriptions.
Analytical Methods	Method	Matrix	Method Descriptions
Hd	EA005	WATER	APHA 21st ed. 4500 H+ B. pH of water samples is determined by ISE either manually or by automated pH meter. This method is compliant with NEPM (1999) Schedule B(3) (AppdK 2)
Total Dissolved Solids (High Level)	EA015H	WATER	In-House, APHA 21st ed., 2540C A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-miKed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (1999) Schedule B(3) (AppdK 2)
Alkalinity by PC Titrator	ED037-P	WATER	APHA 21st ed., 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (1999) Schedule B(3) (AppdK 2)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	APHA 21st ed., 4500-SO4 Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (1999) Schedule B(3) (AppdK 2)
Chloride by Discrete Analyser	ED045G	WATER	APHA 21st ed., 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	Major Cations is determined based on APHA 21st ed., 3120xUSEPA SW 846 - 6010 The ICPAES technique ionises the 0.45um filtered sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrik matched standards for quantification. This method is compliant with NEPM (1999) Schedule B(3) (AppdK 2) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (1999) Schedule B(3) Hardness parameters are calculated based on APHA 21st ed., 2340 B. This method is compliant with NEPM (1999) Schedule B(3) (AppdK 2)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125xUSEPA SW846 - 6020, ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



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Method Matrix Method Descriptions action of Liquids ORG14 WATER USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially efticated action of Liquids ORG14 WATER USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially efticated action of Liquids ORG14 WATER USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially efticated action of Liquids ORG14 WATER USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially efticated action of Liquids ORG14 WATER USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially efticated action of Liquids ORG14 WATER USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially efticated action of Liquids Mathod is compliant with NEPM (1999) Schedule B(3) (AppdK 2). ALS default effclude analysis. This method is compliant with NEPM (1999) Schedule B(3) (AppdK 2). ALS default effclude analysis. This method is compliant in the container. Another and series
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Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrik: WATER							
Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
ED045G: Chloride Discrete analyser	3491176-042		Chloride	16887-00-6	1.1 %	89-117%	Recovery less than lower control limit
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EM1306738-004	GW28	Sulfate as SO4 8 Turbidimetric	14808-79-8	Not Determined		MS recovery not determined, background level greater than or equal to 4x spike level.
ED045G: Chloride Discrete analyser	EM1306717-002	Anonymous	Chloride	16887-00-6	Not Determined	-	MS recovery not determined, background level greater than or equal to 4x spike level.
E=026SF: Total CN by Segmented Flow Analyser	EM1306718-002	Anonymous	Total Cyanide	57-12-5	65.2 %	70-130%	Recovery less than lower data quality objective

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

Regular Sample Surrogates

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

Outliers : Analysis Holding Time Compliance

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

No Analysis + olding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

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

No Quality Control Sample Frequency Outliers exist.

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CHAIN OF CUSTODY ALS Laboratory: please tick 🤿

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					RELINQUIS	S.Leong	DATE/TIME:	25/8/13 / 3 pm		NOL				TOTAL BOTTLES				80	8	80	8	8	80	2	-	-					Acd Preserved
UND REQUIREMENTS :	F may be longer for some tests	E NO.: ME/330/13		3398 4403	ILE:	or default):				CONTAINER INFORMA				rype & PRESERVATIVE (refer to codes below)														& Ruchers	25/6/15	TOTAL	d ORC: SH = Sodium Hydroxide
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VTAL EARTH SCIENCES	VONG RD, FOOTSCRAY, VIC. 301	Melbourne Gaswords		REGIN ORQUIZA		YES / NO)	luiza@eesicontracting.com a	liza@eesicontracting.com	HANDLING/STORAGE OR DISPO	SAMPLE DET MATRIX: Solid(S)				SAMPLEID				18	01	40	28	35	23	sate 2	2		Nru upo:	Duyz	811.12		= Unoreserved Plastic: N = Nitric Prese
CLIENT: ENVIRONMEN	OFFICE: 98 MARIBYR	PROJECT: 210074 Sth	ORDER NUMBER:	PROJECT MANAGER:	SAMPLER:	COC emailed to ALS?	Email Reports to : rord	Email Involce to : rorqu	COMMENTS/SPECIAL	ALS USE ONLY				LABID					(2) GW		(f)	S)		RIN RIN	(S) Trip	(9) Trip		- (a)	E		Water Container Codes: 1

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CHAIN OF CUSTODY ALS Laboratory: please tick 🏓

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□ Malbourne 2-4 Westall Rd. Springvele VIC 3171 Pio.03 8558 060 E: senatore: mediaternive.com □ Addatade: 2-1 Burne Rd. Pooraka SA 6955 Ph. 08 3359 0890 E-adelade@asternio.com

2176 D Reisema: 32 Shand Si Shiffard OLD 4053 D Maheuma: 24 Weald In A Springele NO 3171 D Perth: 10 Hod Way, Malaga WA 6000 com ocom Prior 323 7225 Examples Insthere@Buservice.com Prior 30 5645 9600 E; somples antipation: Prior 35 5695 9600 E; somples antipation: Posterion com Prior 323 7325 Examples printipation: Prior 35 5645 9600 E; somples antipation: Posterion com ocom Prior 323 7252 Examples Insthere@Buservice.com Prior 35 7565 E; sumples printipation: Laurestan TA5 7560 ocom Prior 37 730 9600 E; townsville: 10-10 Prior 35 56950 E; adelalde@Pletervito.com Prior 35 7555 E; Laurestan TA5 7560 drocom Prior 37 750 9600 E; townsville: 10-10 Prior 36 9600 E; adelalde@Pletervito.com Prior 35 7555 E; Laurestan TA5 7560	REMENTS : FOR LABORATORY USE ONLY (CITCIO)	er for some tests	33013 COC SEQUENCE NUMBER (Frankel) azan ku briten present upon (res) No (Circle) (Circle)	C(1 2 3 4 5 7 Random Sample Temperature on Recept. X.	0123457 Obstramment Durf - 25 5	RELINQUISHED BY: RECEIVED BY: RELINQUISHED BY: RECEIVED BY:	S.Leong ALS Courier	DATE/TIME: DATE/TIME: DATE/TIME: DATE/TIME:	25801315 pm 256013 5pm 2.2 b, 1 b		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to altract suite price) Additional I EIV/ Where Metals are required, specify Total (unfiltered boths required) or Disactived (3666 filtered boths required)	Market State Market State Market State Market State Base Reveal Market State Base State Market State Market State Mark Market St	8 X X X X X X 8 680 19	8 x x x x x x 66 174	8 X X X X X 524 18	8 x x x x x	8 X X X X X 8 8 9 178	8 x x x x x x x x x x x x x x x x x x x	2 X X X	× ×				11/12 · · · · · · · · · · · · · · · · · · ·	
odpark Rd, Smithfield NSW 2 samples sydney@alsernin.c segum Rd, Warabrook NSW 1 segum ples newcastle@alsernin	JRNAROUND REQUIR	andard TAT may be longer Ultra Trace Organics)	S QUOTE NO.: ME/3		ACT PH: 8398 4403	ER MOBILE:	ORMAT (or default):	N			CONTAIN	ATRIX TYPE & PRES	w	w	w	w	w	м	w	M	м		W V Ruc	72 / C	
 Sydney: 277 Wo. Ph: 02 8734 8555 E. Newcastlet 5 Roi. Ph:02 4968 9433 E. 	Ĩ	011 (St. e.g.	A		CONT	SAMPL	EDD F	and sleong@eesi.bi		OSAL:	TALS Water(W)	DATE / TIME	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013		25/4/13	25 6/13 V	
CHAIN OF CUSTODY	T: ENVIRONMENTAL EARTH SCIENCES	E: 98 MARIBYRNONG RD, FOOTSCRAY, VIC. 30	CT: 210074 Sth Melbourne Gaswords	R NUMBER:	CT MANAGER: REGIN ORQUIZA	.ER:	mailed to ALS? (YES / NO)	Reports to : rorquiza@eesicontracting.com :	nvoice to : rorquiza@eesicontracting.com	ENTS/SPECIAL HANDLING/STORAGE OR DISP(USE ONLY SAMPLE DE MATRIX SAId(S)	ABID	(j) GW18	(2) GW01	G GW40	(t) GW28	(S) GW35	(L) GW22	Rinsate 2	(8) Trip 2	(G) Trip 3	ENrie upo:	(10) Juy2	m 8/1/2	のないないである。そのないないのないのないである。