

PROJECT NO. 210074

APRIL 2011 GROUNDWATER INVESTIGATIONS AT FORMER SOUTH MELBOURNE GASWORKS

ENVIRONMENTAL EARTH SCIENCES VIC REPORT TO CITY OF PORT PHILLIP SEPTEMBER 2013 VERSION 3









EXECUTIVE SUMMARY

Background

In April 2011, Environmental Earth Sciences VIC undertook a further groundwater investigation at the former South Melbourne Gasworks on behalf of City of Port Phillip (CoPP). The site is currently undergoing a two stage 53V audit commissioned by Council to assess risks of harm posed by the site. The first stage of the 53V audit was undertaken by Dr. Peter Nadebaum of GHD in December 2008 and involved undertaking a 'preliminary assessment of available information regarding risks associated with groundwater and soil contamination to determine what further investigation and remediation works would be required to complete the audit'.

As detailed in the audit report, further environmental investigation and monitoring works are required to address the higher risk issues identified at the site, determine requirements for remediation and the site's suitability for future land uses.

The objectives of this groundwater investigation were to gain an improved understanding of hydrogeological and hydro-geochemical data related to the site and investigate the sources for the contaminants of potential concern (CoPCs) detected in the groundwater. The data and observations noted during this groundwater investigation will assist to address the higher risk issues identified at the site.

Field work as part of this groundwater investigation (on- and offsite) included:

- a groundwater gauging round, including the recording of groundwater standing water levels (SWLs), assessment of the presence of non-aqueous phase liquids (NAPL) and well serviceability checks;
- the installation of five shallow and three deep groundwater wells;
- development of all onsite and offsite groundwater wells, including existing and newly installed wells;
- the collection of groundwater samples from thirty one (31) existing groundwater wells and eight recently installed wells for laboratory analysis of chemicals of concern (CoC), following adequate purging, stabilisation and recording of field parameters; and
- evaluation of aquifer properties via estimates of physical parameters by slug tests (i.e. rising and falling head tests) selectively undertaken on six groundwater wells.

Groundwater flow system

The local hydrostratigraphy consists of Brighton Group sediments (BG) overlying Older Volcanics basalts. Groundwater flow through the full saturated thickness of the BG is controlled by deep sewers which border the site on three sides. 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.

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

- nearly all of the groundwater flow in the BG beneath the site originated as on-site recharge;
- there is an upward gradient from the OVB to the BG. Due to this gradient, contaminated groundwater cannot migrate downwards but there may be some minor



upward leakage; however, this flux is considered to be small in comparison to the flux derived from on-site recharge;

- all the groundwater discharging from the site is captured by the sewers;
- lateral groundwater flow towards the sewers takes place through the full 10-m saturated thickness of the BG. However, the greatest lateral flux takes place through the layers of greatest hydraulic conductivity (K);
- the oldest groundwater within the BG on site is likely to be close to the sewers, within the relatively low K zones of the BG, and/or in areas of relatively low hydraulic gradient;
- the median K of the BG at the site was evaluated from slug tests to be approximately 0.3 m/day; and
- the average linear velocity of the groundwater flowing laterally through the BG over most of the site is estimated to be approximately 5 m/yr.

The total flux of groundwater from the site to the surrounding sewers from Gasworks Park and Southport Community Nursing Home is estimated to be approximately 11 m3/day, (4 ML/yr). The average recharge rate across the site was estimated to be approximately 0.1 m/yr.

Groundwater contamination

Groundwater at the site is impacted with common gasworks contaminants, including heavy metals (primarily arsenic [As], cobalt [Co], copper [Cu], lead [Pb] and zinc [Zn]), ammonia (NH_4^+) , cyanide (CN), sulfate (SO_4^{2-}) , polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPHs) and monocyclic aromatic hydrocarbons (MAHs). However, there is no evidence of either dense NAPL (DNAPL) or light NAPL (LNAPL).

The vertical and lateral distribution of the groundwater contamination is consistent with the former gasworks infrastructure and the physical groundwater flow system. The greatest concentrations of total dissolved solids (TDS), SO_4^{2-} , NH_4^+ , CN and many organics in 2011 were detected in monitoring wells screened in the lower BG near the site perimeter in the vicinity of former gas purifiers. This contamination is interpreted to have originated on site. The groundwater in the BG is not interpreted to have been significantly impacted by the upwelling of higher salinity groundwater via the underlying OVB.

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.

As all the groundwater migrating from the site is captured by the sewers, all the dissolved contaminants are also captured by the sewers. For the most part, the contaminated groundwater from the site migrates directly to the sewers without passing beneath neighbouring properties. However, there is an area to the northeast of Richardson Street where a plume of the $\mathrm{NH_4}^+$ and $\mathrm{SO_4}^{2^-}$ contamination that migrates beneath up to 18 properties en route to the South Yarra Sewer Main beneath Bridport Street. Relatively high concentrations of CN and PAHs have also been detected in groundwater samples from this area. Although the current groundwater flow direction is interpreted to be parallel to, rather than across, Richardson Street, the Gasworks site is considered likely to be the original source of this area of groundwater contamination.



Elevated concentrations of PAHs were also detected within newly installed groundwater wells in an area of very low hydraulic gradient in the northern part of the site. Based largely on the low hydraulic gradient in this area, it is considered unlikely that contaminated groundwater at Gasworks Park would migrate to the north west beneath the neighbouring Alinta Site and present a risk to off-site users.

Potential beneficial uses

Based on TDS values south east of the site and in this general region, the groundwater has been classified as 'Segment A₂', with a TDS range of 501-1,000 mg/L. However, the quality of some of the non-impacted groundwater in the vicinity of the site does not support some of the protected beneficial uses.

In this urban environment with a municipal reticulated water supply, the potential beneficial uses of potable water and mineral water supply are not considered to be realistic potential beneficial uses. However, the Victorian Groundwater Database shows that some wells have been installed in the area for stock/domestic and irrigation purposes.

As all contaminants being transported in groundwater from the site are captured by the sewer system, there is currently negligible risk of impacted groundwater from Gasworks Park discharging to receiving waters (i.e. ecosystems) in the vicinity of the site.

As the site is owned by the City and the State of Victoria and the groundwater is known to be contaminated, the abstraction of groundwater onsite for any purpose is being controlled by an ICMP. Therefore, on site, the above potential beneficial uses, with the exception of buildings and structures, are considered to be precluded.

In the area of gasworks-related groundwater contamination beneath private residences to the northeast of Richardson Street and northwest of Bridport Street, the abstraction of groundwater is not currently prevented. Although the BG in this area has a particularly low potential yield due to a limited saturated thickness, the potential beneficial uses of primary contact recreation, irrigation and stock/domestic cannot be discounted in this area.

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 than the total flow rate of sewage through the sewers to the Werribee Treatment Plant. Therefore, 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 in the sewers themselves would protect workers from any additional contaminants introduced into the sewers from the site.

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 orders 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.

Risks associated with the area of groundwater contamination to the north east of the site would only apply if the groundwater is extracted. Although the resource is physically limited and groundwater extraction is unlikely, it is not currently prevented in this area.



Recommendations

The requirements of an existing Deed of Agreement between CoPP, Melbourne Water and South East Water include ongoing groundwater monitoring and notification of changes in conditions. Therefore, we recommend a GME takes place during the next several weeks to months, incorporating rationalisation of the wells to be sampled and the suite of analytes.

Additionally, it is recommended that the mass flux of contaminants discharging to the sewers is revisited and the associated very low risk to the sewer system and the treatment plant is confirmed.

We recommend a review of possible management/remediation strategies for the area of groundwater contamination to the north east of the site. This review would include consideration of the potential cost, benefit, duration, practicality, environmental footprint and risks of approaches to remediation in this area, in comparison to the current situation in which all this groundwater is captured by the sewer system.

We recommend that a GQRUZ be considered that would cover the area of interpreted gasworks-related groundwater contamination to the north east of the site. This would cover an area of approximately 20-30 private properties.

Author

David James Environmental Engineer

Edited by

Anne Whincup Environmental Scientist

Sylvia Tari Senior Environmental Geologist

Alan Wade Principal Hydrogeologist

Sookfei Leong Environmental Engineer

Regin Orquiza Senior Environmental Engineer

Internal Reviewer
Mark Stuckey
Principal Hydrogeologist
210074 – South Melbourne Gasworks - GW Report V3



TABLE OF CONTENTS

1	INT	TRODUCTION		
2	OBJ	ECTIVES	2	
3	SITE IDENTIFICATION			
	3.1	SITE LOCATION	2	
	3.2	CURRENT SITE USES AND CONDITION	2	
		3.2.1 Description of local sewer system	3	
		3.2.2 Building design	3	
		3.2.3 Surrounding land use	4	
	3.3	PROPOSED FUTURE LAND USE	4	
4	SUMMARY OF SITE HISTORY			
	4.1	IDENTIFIED CHEMICALS OF POTENTIAL CONCERN	5	
	4.2	PREVIOUS INVESTIGATIONS	5	
		4.2.1 Golder Associates	5	
		4.2.2 GHD	6	
5	GEOLOGY AND HYDROGEOLOGY			
	5.1	GEOLOGY	7	
		5.1.1 Soil	7	
	5.2	HYDROGEOLOGY	8	
		5.2.1 Groundwater flow	8	
		5.2.2 Trade Waste Agreement	9	
		5.2.3 Regional groundwater utilisation	10	
		5.2.4 Groundwater monitoring well network	11	
6	ASS	ESSMENT CRITERIA	11	
7	FIELD ASSESSMENT1			
	7.1	GROUNDWATER WELL INSTALLATION	14	
		7.1.1 Shallow Brighton Group wells	15	
		7.1.2 Deep Brighton Group wells	15	
		7.1.3 Well development	15	
	7.2	GROUNDWATER SAMPLING METHODOLOGY	16	
	7.3	GROUNDWATER FIELD PHYSICAL ASSESSMENT	17	
8	LABORATORY ANALYSIS			
	8.1	LABORATORY ANALYSIS	17	
	8.2	PROCEDURES FOR QUALITY ASSURANCE AND QUALITY CONTROL	18	
9	GRO	DUNDWATER CHEMISTRY RESULTS	19	
	9.1	ORGANIC GROUNDWATER ANALYSIS	19	



TABLE OF CONTENTS (CONTINUED)

	9.2	INORGANIC GROUNDWATER ANALYSIS	20
10	DISCUSSION AND INTERPRETATION OF NEW DATA		
	10.1	PHYSICAL HYDROGEOLOGY	24
	10.2	ESTIMATED GROUNDWATER FLUX TO SEWERS	26
	10.3	HYDROGEOCHEMISTRY	27
		10.3.1Shallow groundwater wells	27
		10.3.2Deeper OS groundwater wells	29
	10.4	CONSIDERATION OF CONTAMINANTS OF CONCERN	31
		10.4.1 Dissolved heavy metals	31
		10.4.2Miscellaneous inorganics	32
		10.4.3Organics	33
	10.5	BENEFICIAL USES OF GROUNDWATER	34
		10.5.1 Maintenance of ecosystems	34
		10.5.2Potable water supply (acceptable)	35
		10.5.3Potable mineral water supply	35
		10.5.4Water supply: Irrigation	35
		10.5.5Water supply: domestic and stock use	36
		10.5.6Industrial use	36
		10.5.7Primary contact recreation	36
		10.5.8Buildings and structures	38
	10.6	TRADE WASTE AGREEMENT	38
11	CON	CLUSIONS AND RECOMMENDATIONS	39
	11.1	GROUNDWATER FLOW SYSTEM	39
	11.2	GROUNDWATER CONTAMINATION	40
	11.3	POTENTIAL BENEFICIAL USES	41
	11.4	TRADE WASTE AGREEMENT	42
	11.5	RISKS ASSOCIATED WITH THE GROUNDWATER CONTAMINATION	42
	11.6	RECOMMENDATIONS	43
12	REF	ERENCES	43
12	CLOSSARY OF TERMS		46



TABLE OF CONTENTS (CONTINUED)

FIGURES

- 1 LOCALITY MAP
- 2 SOUTH MELBOURNE GASWORKS CURRENT SITE LAYOUT
- 3 GROUNDWATER WELL LOCATIONS
- 4 DEEP WELL CONSTRUCTION GW42D & GW43D
- 5 DEEP WELL CONSTRUCTION GW44D
- 6 INFERRED WATER TABLE SURFACE APRIL 2011
- 7 TDS CONCENTRATIONS APRIL 2011
- 8 AMMONIA CONCENTRATIONS APRIL 2011
- 9 SULFATE CONCENTRATIONS APRIL 2011
- 10 CONCEPTUAL CROSS SECTION A A'
- 11 CONCEPTUAL CROSS SECTION B B'
- 12 SWIMMING POOLS NEAR THE SITE
- 13 CONCEPTUALISATION OF ON-SITE GROUNDWATER FLOW SYSTEM

TABLES

- 1 SEPP GOV GROUNDWATER BENEFICIAL USES
- 2 GROUNDWATER WELL CLASSIFICATION (SEPP GOV)
- 3 REGISTERED GROUNDWATER WELLS WITHIN A 3 KM RADIUS OF THE SOUTH MELBOURNE GASWORKS
- 4 SUMMARY OF EXISTING GROUNDWATER MONITORING WELLS
- 5 NEW GROUNDWATER WELL LOCATIONS AND RATIONALE
- **6 GROUNDWATER WELL INSTALLATION DETAILS**
- 7 GROUNDWATER WELL DEVELOPMENT DETAILS
- 8 FIELD GROUNDWATER PARAMETER MEASUREMENTS
- 9 GROUNDWATER STANDING WATER ELEVATIONS
- 10 AQUIFER PROPERTIES EVALUATED FROM SLUG TESTS
- 11 INORGANIC GROUNDWATER RESULTS SUMMARY ONSITE WELLS
- 12 INORGANIC GROUNDWATER RESULTS SUMMARY NORTH WEST WELLS
- 13 INORGANIC GROUNDWATER RESULTS SUMMARY NORTH EAST WELLS
- 14 INORGANIC GROUNDWATER RESULTS SUMMARY SOUTH EAST WELLS
- 15 ORGANIC GROUNDWATER RESULTS SUMMARY ONSITE WELLS
- 16 ORGANIC GROUNDWATER RESULTS SUMMARY NORTH WEST WELLS
- 17 ORGANIC GROUNDWATER RESULTS SUMMARY NORTH EAST WELLS
- 18 ORGANIC GROUNDWATER RESULTS SUMMARY SOUTH EAST WELLS



TABLE OF CONTENTS (CONTINUED)

APPENDICES

- A GEOLOGICAL LOGS AND WELL CONSTRUCTION DETAILS
- **B** SLUG TEST ANALYSES
- C LABORATORY TRANSCRIPTS AND CHAIN OF CUSTODY FORMS
- D QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES
- E DEED OF AGREEMENT GROUNDWATER AND GASWORKS ARTS PARK, ALBERT PARK
- F CALIBRATION CERTIFICATES
- G SOUTH EAST WATER 'STANDARDS FOR TRADE WASTE DISCHARGE TO THE SEWERAGE SYSTEM'
- H SUPPLEMENTAL FIGURES ILLUSTRATING CONCENTRATIONS OF SELECT ANALYTES
- I RECORDED GROUNDWATER FIELD PARAMETERS
- J PIPER PLOT CHART



1 INTRODUCTION

The site was formerly the manufacturing area of the South Melbourne Gasworks (SMG), and operated from 1983 to 1995, with some aspects remaining functional until 1977. The site was redeveloped and has been used as a park since the 1980's by the City of Port Phillip (CoPP).

The site is currently managed in accordance with two Interim Contamination Management Plans (ICMPs); one applicable to the Southport Community Nursing Home and the other to the Gasworks Arts Park. The ICMPs are subject to changes and amendments pending further investigation, remediation and/or management.

The site is currently undergoing a two stage 53V audit commissioned by CoPP to assess risks of harm posed by the site. The first stage of the 53V audit was undertaken by Dr. Peter Nadebaum of GHD in December 2008 and involved undertaking a 'preliminary assessment of available information regarding risks associated with groundwater and soil contamination to determine what further investigation and remediation works would be required to complete the audit'. The findings of the first stage were documented in a report entitled "Section 53V Environmental Audit – Interim Report" (December, 2008). As detailed in the audit report, further environmental investigation and monitoring works are required to address the higher risk issues identified at the site, determine requirements for remediation and the sites suitability for future land uses.

Environmental Earth Sciences VIC prepared a scope and methodology for environmental investigational works at the former South Melbourne Gasworks in accordance with information provided within the tender document Sections 3.1 to 3.4 (*Specification*), and in reference to the Auditor's comments detailed in the Interim Audit Report (December 2008).

This scope and methodology was refined once a detailed review of existing site environmental reports and the development of a Sampling and Analysis Plan (SAP) and comments received within GHD 31/26548/189319Letter entitled 'Gasworks Site Environmental Audit Sampling and Analysis Plan' and SAP discussion between Environmental Earth Sciences VIC, CoPP and GHD on 2 December 2010 and on 12 January 2011

Version 1 of this report (210074 – South Melbourne Gasworks – GW Report V1) was issued to the Auditor in August 2011. Round 1 comments regarding Version 1 of the report were received from the Auditor (GHD reference: 31/26548/201840) in November 2011. Environmental Earth Sciences' responses to Round 1 comments were issued in April 2012. Meetings with the Auditor then took place to discuss the round 1 comments and our responses, and the decision was made to review the interpretations in the report and revise the report.

Furthermore, the Auditor issued round 2 comments (in response to our round 1 comments) in June 2012. This document (210074 – South Melbourne Gasworks – GW Report V2) presents a revised description and interpretation of the groundwater conditions which considers the issues and comments raised and provided by the Auditor (in round 1 and 2 comments).

The work reported upon in this document has been undertaken in accordance with discussion between Environmental Earth Sciences VIC, the Auditor and CoPP.



Professional judgement was used to extrapolate between inspected areas, however, even under ideal circumstances actual conditions may vary from those inferred to exist. The actual interface between materials and variation in groundwater quality may be more abrupt or gradual than the report indicates. This is described in more detail in Section 10.

2 OBJECTIVES

The objectives of this groundwater investigation are to improve the understanding of hydrogeological and hydro-geochemical data related to the site. The data and observations noted during this groundwater investigation will assist to:

- further characterise and delineate groundwater pollution offsite to the north east;
- identify the potential source(s) of the offsite groundwater pollution;
- investigate if Gasworks Park is a potential source of groundwater pollution offsite towards the Alinta Site (north west);
- determine the aquifer (Brighton Group) physical parameters, particularly with respect to groundwater flux to the sewers;
- further refine/evaluate the validity of the current conceptual site models including relevant beneficial uses of groundwater (groundwater utilisation);
- access the presence of non-aqueous phase liquid (NAPL) in groundwater; and
- access the potential for contamination of deeper groundwater on- and offsite due to onsite pollution.

3 SITE IDENTIFICATION

3.1 Site location

The site is currently owned by CoPP in conjunction with the State of Victoria. The CoPP currently operate as the 'Committee of Management' for the site. The site is situated 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).

3.2 Current site uses and condition

The site covers an area of 3.43 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:

• 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.
- the South Melbourne Gas Regulator Site (i.e. Alinta Site) is situated on the corner Pickles and Richardson Streets and is not included within the investigation area. This area is covered by bitumen hard stand, and is occupied by a brick building in the northern portion of the site, which was a historical part of the original SMG infrastructure. The building housed the regulator station, which controlled pressure in the gas distribution pipes.

3.2.1 Description of local sewer system

Gasworks Park and Southport site are bounded by two major underground sewer mains owned and maintained by Melbourne Water (i.e. South Yarra Main and Hobsons Bay main) and two minor sewer systems owned and maintained by South East Water. The South Yarra main and Hobsons Bay main are situated along Bridport Street and the Graham Street road reserve, respectively. The two minor sewer systems run along Pickles Street and Richardson Street. Details of each sewer are provided below:

South Yarra main sewer is 2.05 m in diameter and is known to have an invert level of RL – 11.22 m Australian Height Datum (AHD) at the intersection of Bridport and Durham Street and decreases to RL -11.28 m AHD at the junction with the Hobsons Bay main at Graham Street.

Hobsons Bay main sewer runs in a general north-western direction along Danks Street, before heading north along Foote Street to Graham Street and the confluence with the South Yarra main. The Hobsons Bay main sewer then continues in a north-western direction along Graham Street to Williamstown Road. It is understood to continue along Williamstown Road to Howe Parade and along Howe Parade under the Yarra River to the former Melbourne Metropolitan Board of Work (MMBW) sewerage pumping station in Newport (now Science Works). Golder Associates indicated that "along Graham Street in the vicinity of the site, the sewer has a diameter of 2.4 m. The invert level varies from is known to be 2.4 m in diameter and with an invert level ranging from RL – 11.73m near the intersection with Foote Street to – 11.80 m AHD near the intersection with Pickles Street.

Pickles Street sewer is a brick construction with a known diameter between 0.525 m and 0.6 m. The sewer is at an invert level of RL -8.1 m AHD near the intersection with Hobsons Bay main sewer at Graham Street.

Richardson Street sewer is a concrete construction with a diameter of around 0.225 m and invert level of RL -3.45 m AHD. Additionally the Richardson Street main drain (storm water) owned by Melbourne Water is situated along Richardson Street on the northern boundary of Gasworks Park and crosses Pickles Street at the northern boundary of the Alinta site. The stormwater pipe is a 1.8 metre diameter concrete pipe at an invert level of RL -1.04 at the Pickles Street crossing.

3.2.2 Building design

Buildings were generally noted as being constructed slab on grade with either wooden floors or carpet as a covering layer and brick walls. Buildings were all single level without any basements, with the exception of the gatehouse building which had an open plan mezzanine level. Most original Gasworks buildings were also noted to have air vents at the top of the buildings. In addition most of the buildings are open plan, occasionally with smaller rooms such as toilets, kitchenettes or storage areas.



All buildings on-site with the exception of South Port nursing home and the new administration area are original gasworks buildings.

3.2.3 Surrounding land use

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).

3.3 Proposed future land use

The CoPP has advised that the desired future land use of both Gasworks Park is likely to remain 'Open Space Parkland', and the Southport site to remain a nursing home, which may be developed into another community use sometime in the future.

4 SUMMARY OF SITE HISTORY

In 1871 the South Melbourne Gas Company was established and leased 2.43 ha of land on Pickles Street on the boundary of what are now, the suburbs of Albert Park and Port Melbourne. The construction of the Port Melbourne gas manufacturing plant was completed in 1873. Following completion, the South Melbourne Gas Company merged with Melbourne and Collingwood Gas Companies, forming the Metropolitan Gas Company.

A crown grant for the leased site was issued to the Metropolitan Gas Company in 1878, with an additional 1ha of land being purchased in the northern section (East of Pickles Street). The main manufacturing plant for Gasworks was developed in this area. The operation was expanded over the following years with establishment of the meter shop site (1885), No. 1 Holder site (1888) and laboratory and oil store (1913). Following a short period of closure during the depression, some sections of the plant never reopened. Gas manufacture, however continued up until 1971 with the Gas and Fuel Corporation of Victoria becoming the registered proprietor of all properties onsite in 1955.

The City of South Melbourne and Government of Victoria acquired the manufacturing plant in 1979, redeveloping it into Gasworks Park. Gas and Fuel Corporation of Victoria still operate a small depot in the northern corner of the former gasworks site (i.e. Alinta site), however this is not part of the area under investigation. Southport Community Nursing Home was constructed on city owned land to the north-east of the site in 1981.

Investigations into the contamination status of the site commenced around 1985 with EPA Victoria issuing a Clean Up notice to Gas and Fuel Corporation of Victoria in 1988. The Gas and Fuel Corporation commenced assessment and remediation across the site as required under the Clean up Notice, resulting in EPA Victoria declaring the site suitable for park use in 1992. A historic site review prepared in 2004 by Golder Associates, however recommends that CoPP conduct further assessment and management of the site due to potential risks associated with soil and groundwater contamination.

Further detail regarding site history please refer to Environmental Earth Sciences VIC, 2010, Report 210074 titled 'Sampling and analysis plan for the former South Melbourne Gasworks, Albert Park, Victoria'.



4.1 Identified chemicals of potential concern

Contaminants of potential concern are associated the numerous gas manufacturing process during the site historical use as a gas manufacturing plant. These include:

- polycyclic aromatic hydrocarbons (PAH) from tar, coke, ash and oil wastes;
- total petroleum hydrocarbons (TPH) from tar, oil wastes as well as oil storages;
- heavy metals [i.e. arsenic (As)] from concentration of coal minerals;
- cyanide, sulfates and sulphides from gas purification and waste water treatment;
- phenols from tar wastes;
- monocyclic aromatic hydrocarbons (MAHs) including but not limited to benzene, toluene, ethylbenzene and xylene compounds (BTEX);;
- polychlorinated biphenyls (PCBs) associated with the substations; and
- solvents associated with maintenance.

4.2 Previous investigations

4.2.1 Golder Associates

A total of eleven documents, detailing environmental works undertaken by Golder Associates at the site between 2004 and 2007, were provided for review as part of this groundwater investigation. The reports detail the site history, site conceptual model, soil and groundwater investigations undertaken and recommendations for further investigation and remediation.

From these works, Golder Associates concluded the site history indicated significant potential for contamination of soil and groundwater to have occurred from historical on-site gasworks processes and/or the storage/management of on-site waste. As little remediation of on-site soil was conducted, the potential for the soil to still be contaminated and acting as a source for groundwater impacts was high. Remediation was limited to excavation of 0.5 m of contaminated fill material and replacement with "clean soil" in the south-eastern corner of the site. Other remedial works have been limited to landscaping and the placing of topsoil and clay over the site.

The general stratigraphy within Gasworks Park was observed to comprise a layer of fill material overlying natural sands, clayey sands and sandy clays. Fill material varied between 0.5 m and 3.2 m and surface fill material generally comprised black sands with fragments of coke, bricks and glass.

Groundwater impacts include:

- contamination with common gasworks chemicals, including heavy metals, ammonia, total cyanide, sulfate, total dissolved solids (TDS), PAHs, TPHs and monocyclic aromatic hydrocarbons (MAHs);
- the main sources of ammonia, TDS and sulfate in the groundwater appears to be in the north eastern portion of the site, whilst the main PAH and MAH sources appear to be in the south eastern and north eastern portion of the site;
- groundwater to the west and north west of Gasworks Park is contaminated with some heavy metals [arsenic (As), cobalt (Co), copper (Cu), lead (Pb), nickel, (Ni), zinc (Zn), selenium (Se), boron (B) and manganese (Mn)], sodium (Na), sulfate (SO₄²⁻), chloride (Cl), bicarbonate (HCO₃) and total CN. Concentrations are generally consistent across



the off-site wells to the east and north of Gasworks Park, potentially indicating background concentrations of the area;

- the main CoC found during the groundwater sampling was ammonia;
- levels of pH are indicative of background concentrations and are not considered to be as a result of contamination at the site; and
- there are a variety of potential sources of the groundwater contamination in the north-western portion of the Gasworks Park including Gasworks Park, the Alinta site, the former gasholder yard and laboratory site to the west of Pickles Street, and potentially other currently unidentified areas in the vicinity where gasworks fill which may have been placed as part of historical filling in the region.

The hydrogeological conceptual model indicates that discharge of groundwater from the Gasworks Park precinct is to the surrounding the sewer network, of which the point of discharge is thought to be the Werribee Treatment Plant. There were, however, three possible areas of off-site impact from groundwater beneath the Gasworks Park and Southport site which were identified as:

- the Alinta site:
- the area between the site and the South Yarra main and Hobsons Bay main (surrounding road reserves); and
- the residential area north of Richardson Street and north east of Southport Community Nursing Home between the site and the point of discharge into the South Yarra main.

For more detail of previous environmental investigations undertaken at the site, please refer to Environmental Earth Sciences VIC, 2010, Report number 210074 - Sampling and Analysis Plan for the former South Melbourne Gasworks, Albert Park, Victoria (Environmental Earth Sciences, 2010).

4.2.2 GHD

GHD undertook a preliminary assessment of the risks associated with groundwater and soil contamination at SMG as part of the 53V audit currently being undertaken by Dr. Peter Nadebaum. This objective and method of 'screening risk assessment' was to formulate the auditor's opinion on the risk posed to the relevant beneficial uses. This report also documents what further investigation and remediation work may be require to complete the audit.

In each case, a particular scenario and level of effect was considered, and the likelihood of this scenario occurring was then determined based on the information obtained from the preliminary review of information pertaining to SMG and in consultation with stakeholders.

Findings of the screening risk assessment process, taking into account the relevant controls measure, are identified as the following:

- 50 medium risk scenarios;
- 99 low risk scenarios; and
- 115 negligible risk scenarios.



The auditor identified groundwater issues requiring further assessment to resolve uncertainty and to better understand the level of risk, which included:

- non-aqueous phase liquid (NAPL), particularly its presence and extent on-site, and its significance as an on-going source of vapour and groundwater contamination;
- the migration of dissolved phase groundwater contamination off-site, and the potential for use of this groundwater; and
- the extent to which deeper groundwater might be contaminated and result in groundwater contamination migrating from the site.

5 GEOLOGY AND HYDROGEOLOGY

This section provides an overview of the geology and hydrogeology summarised from previous reports, particularly the *Sampling and Analysis Plan* (Environmental Earth Sciences, 2010).

5.1 Geology

According to the Geological Survey of Victoria (GSV 1974) *Melbourne 1:63,360 map sheet*, the surface geology at the site is the Recent Holocene aged (0-10,000 year old [yo]) Port Melbourne Sand (PMS), consisting of raised beach ridges of well sorted sand, shelly sand, minor silty or clayey sand.

Regionally, the PMS formation in the region is sequentially underlain by the following formations:

- Pliocene age (late Tertiary era 5.3 to 1.8 myo) Brighton Group sediments, consisting of red-brown, yellow and white cross-bedded sands and silty sands (with clay);
- Late Lower Tertiary Eocene aged (36-53 Myo), olivine and titanaugite dense blue-black Older Volcanics basalt (OVB);
- Eocene age (early Tertiary era 54.8 to 33.7 myo) sand and silty-sands with clay, with pyritic and lignitic sands, of the Werribee Formation; and
- Late Upper Silurian aged (400 Myo) Dargile Formation sandstone and siltstone.

The geological units encountered during site investigation works included:

- PMS the upper geological formation at the site, which discontinuously underlies the fill material, and has been identified in lenses up to 2.6 m thick in the southern portion of Gasworks Park;
- Brighton Group encountered underlying fill material and, where present, the PMS.
 Brighton Group sediments have been identified extending to a maximum depth of 22 m BGL; and
- OVB identified underlying Brighton Group sediments at approximately 18 m BGL in the north-eastern portion of the site.

5.1.1 Soil

The soils of the local area are described in van de Graaff (1996) - *Landcare Notes Melbourne Soils* as comprising dark loams, clays and local sands. These features are consistent with the local geology as described above, being PMS sands and silty/clayey



sands. Although the site is located in an area that potentially contains acid sulfate soil (ASS) (DPI, 2003) the only estuarine deposits where ASS are likely have been identified to the west of the site.

5.2 Hydrogeology

Interpretation of previous groundwater investigations and monitoring events indentified several potential aquifers and aquitards beneath the site. The Brighton Group is the shallowest aquifer on site. It is underlain by the OVB, which is considered to be an aquitard due to its high clay content. As such it hydraulically insulates but does not isolate the deeper geological units from the Brighton Group sediments.

Table 3 summarises registered groundwater wells within 3 km of the site from a recent well search. It is understood that there are 29 registered groundwater wells with variable yields existing within the OVB within a 3 km radius (limits of SKM groundwater well database search) of the site (although none of these are on the site). There have been no registered groundwater wells accessing the Dargile Formation within 3 km radius of the site. Most registered wells in the vicinity of the site are screened within the Quaternary and Tertiary sediments of the PMS and Brighton Group. Therefore, it is the utilisation of the watertable aquifer in Brighton Group Sediments which is of primary concern.

5.2.1 Groundwater flow

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. Previous groundwater assessments at the site (Golder Associates, 2006; 2006b; and 2006c) indicate that local groundwater flow in the shallow Brighton Group sediments is controlled by the sewer system(s) that is described previously in Section 3.2.1.

Groundwater within the Brighton Group sediments beneath Gasworks Park generally flows radially from the site towards the nearby sewers aligned along Foote Street, Graham Street and Pickles Street, which act as groundwater sinks. This is consistent with the deepest drawdown being observed at the corners of the site, which is supported by previous investigations by Golders Associates. Groundwater levels in the Brighton Group beneath Gasworks Park are all below sea level due to the drawdown caused by the sewers. Therefore, the vertical gradient between the OVB and the Brighton Group is upwards, potentially contributing inflow to the groundwater system beneath the site.

An upward hydraulic gradient would prevent the downward migration of any contaminants of potential concern (CoPC) from the water table aquifer in the Brighton Group. Golder Associates noted that "given the laterally extensive nature of the observed length of groundwater depression, it appears that leakage into the South Yarra main sewer and Hobsons Bay main occurs regularly along the sewer length rather than in discrete zones. As a result, groundwater is unable to migrate across the depression but rather discharges to the sewer" (Golder Associates, 2006e). Thus, the distribution of CoPCs is interpreted to be controlled and contained both vertically and horizontally by the sewer network around the site.

This local groundwater flow system is dependent on the leakage of groundwater into the sewers. If leakage to the sewers were reduced significantly, the flow regime would change.



5.2.2 Trade Waste Agreement

During the initial planning phase of the further groundwater investigation strategy with CoPP and the auditor, Environmental Earth Sciences VIC was informed of a 'Deed of Agreement Groundwater and Gasworks Arts Park, Albert Park' executed between CoPP, Melbourne Water and South East Water on 4 January 2010.

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. A copy of the 'Deed of Agreement' is provided in Appendix E.

Under the Operative provisions 'City of Port Phillip obligations', CoPP agreed that it will:

- prepare a monitoring plan and submit it to Melbourne Water and South East Water for approval;
- continue to monitor groundwater contamination at, and in the vicinity of, the South Yarra main, Hobsons Bay main and Pickles Street branch sewer in accordance with the monitoring Plan;
- supply data relating to groundwater recorded or obtained in the course of implementing the monitoring Plan to Melbourne water and South Easter water;
- notify Melbourne Water and South East Water of any groundwater changes in accordance with the monitoring plan; and
- have and implement a contingency plan to manage the contamination risks posed by groundwater to meet EPA requirements should Melbourne Water or South East Water undertake work to its sewer which increases risks associated with groundwater contamination from the site to an unacceptable level.

As part of the 'Deed of Agreement', Melbourne Water obligations include the following:

- it will accept groundwater from the Gasworks Site into the South Yarra Main and Hobsons Bay Main provided that it maintains the right, acting reasonably, not to accept the groundwater if it is found to interfere with the operation or maintenance of its assets or does not comply with trade waste requirements or safety requirements imposed by the Victorian Government from time to time;
- it will not unreasonable withhold its approval of the Monitoring Plan submitted by the Council;
- it will provide Council with eight weeks written notice before commencing any works to the South Yarra Main or Hobsons Bay Main, accompanied by a plan showing the particulars of the proposed works; and
- in the event that emergency works are required to the South Yarra Main or Hobsons Bay Main, it will provide Council with notification as soon as possible after the commencement of the works.

South East Water obligations include the following:

- it will accept groundwater that enters the Gasworks Site into Pickles Street Branch sewer provided that it maintains the right, acting reasonably, not to accept the groundwater if it is found to interfere with the operation or maintenance of its assets;
- it will not unreasonably withhold its approval of the monitoring Plan submitted by Council:



- it will provide Council with eight weeks written notice before commencing any works to the Pickles Street Branch Sewer, accompanied by a plan showing the particulars of the proposed works; and
- in the event that emergency works are required to the Pickles Street, it will provide Council with notification as soon as possible after the commencement of the works.

5.2.3 Regional groundwater utilisation

A registered well search of the Department of Sustainability and Environment (DSE) 'Groundwater Database' (Sinclair Knights Merz, 2010) has indicated that 291 wells are located within a 3 km radius of the site. Drilling geological logs of registered wells located within the vicinity of the site appear to be within the same or similar geological units as at the site. Further useful information however, is limited.

Table 3 summarises the details of the information available for the groundwater wells located within 3 km of the site. Note that some wells did not contain any relevant information.

Groundwater wells with specific information include:

- well 78476 (located 870 m north-west of the site) was installed in 1990. Groundwater was encountered from 1.8 m BGL (below ground level).with the water bearing zone consisting of silty sands and sands with shells. It has an un-known registered use;
- well 78467 (located 1.75 km north-west of the site) was installed in 1986. Groundwater
 was encountered at 3.3 m BGL. The lithology encountered is marl; a lime-rich clay.
 The limited chemistry data available for this well indicates electrical conductivity during
 testing was 221 mg/L TDS. The well is registered for stock/domestic purposes;
- well 78462 (located 1.2 km south-east of site) was installed in 1983 to a total depth of 3 m BGL. Groundwater was encountered at 3 m BGL with a yield of 0.4 L/sec reported at the time of construction. The screen is situated in marl and sand; and
- well 78463 (location 1.9 km north-west of site) was installed in 1983 to a total depth of 5 m BGL. Groundwater was encountered at 1.8 m BGL with a yield of 0.4 L/sec reported at the time of construction. The screen is situated in marl and sand.

Overall, information for wells within 3 km of the site is relatively scarce, the aquifer is not widely used as a resource and that there are no registered wells in the immediate area of the Gasworks Park Precinct. Approximately 63% of the wells were installed for investigative rather than abstraction purposes, 24% were installed for unknown purposes with stock/domestic (12%) and irrigation (3%) accounting for the remaining wells.

There are more than 30 wells in Table 3 with listed uses as stock/domestic or irrigation, including more than 10 within 1 km of the site. Therefore, irrigation is one of the beneficial uses of the local groundwater.

The Department of Natural Resources and Environment (DNRE) South Eastern Victoria Regional Aquifer Systems (1995) defines groundwater in the Upper Tertiary Aquifer System in the vicinity of the site as 'Segment A₂', with a total dissolved solids (TDS) range of 501-1000 mg/L. Segment A₂ groundwater has the full range of protected beneficial uses, i.e. drinking water, potable mineral water, irrigation, stock water, industry, ecosystem protection and building and structures. These beneficial uses are described in more detail in Section 6 and 10.4.



5.2.4 Groundwater monitoring well network

The existing site monitoring well network prior to these works consisted of 35 groundwater monitoring wells identified as GW1 - GW36 as presented in Table 4 (note that monitoring well GW17 does not exist). An additional seven groundwater wells were installed as part of these works, identified as GW37-GW44, as discussed further in Section 8.1.

All groundwater wells are installed into the upper part of the Brighton Group, except wells GW42-GW44, which are deeper wells screened at the base of this unit (as denoted by the suffix D). The locations of the wells are shown in Figure 3. Groundwater wells are classified based on their spatial location into four groups, i.e.

- "OS" Wells: onsite groundwater wells, including all groundwater wells installed in Gasworks park and South Port Nursing home and also including wells GW01, GW05, GW31, GW35 and GW44, which are close to the site perimeter, down-gradient from the site and, therefore, considered to be potentially impacted by on-site contamination;
- "NW" Wells: offsite groundwater wells to the north (and north-west) of the site, i.e. GW06,GW32 to GW34 and GW36;
- "NE Wells": offsite groundwater wells to the east north-east of the site (in the residential area to the east of Richardson Street and to the north of Bridport Street, i.e. GW07, GW08, GW26 to GW30, GW37, GW38; and
- "SE Wells": offsite groundwater wells to the south east of the site (all wells to the east of Foote Street and Bridport Street), i.e. GW09 to GW16 and GW25.

6 ASSESSMENT CRITERIA

The SEPP *GoV* provides the framework for the protection of groundwater and associated beneficial uses throughout Victoria. The policy allows for a consistent approach for the prevention and clean-up of contamination to groundwater throughout Victoria and sets environmental quality indicators and objectives for each beneficial use. The SEPP *GoV* defines certain aquifer categories based on salinity reported as TDS and associated beneficial uses to be protected. The beneficial uses of groundwater to be protected are dependent on the proposed land-use and are shown in Table 1.

Beneficial uses pertaining to the site may not apply to groundwater when:

- there is insufficient groundwater yield;
- the background level of a water quality indicator/s other than TDS precludes a beneficial use;
- the soil characteristics preclude a beneficial use; and
- a Groundwater Quality Restricted Use Zone (GQRUZ) has been declared by the EPA.

Any assessment of the likelihood of beneficial uses of groundwater being realised should be based on an evaluation of whether an owner/occupier of the site (or in the vicinity of the site) may reasonably expect to use or be able to use groundwater for the relevant purposes.

Based on the TDS values considered to be background in the area of SMG the groundwater classifies as Segment A_2 . The SEPP *GoV* states that in order to protect the beneficial uses associated with the 'Segment A_2 ' (relevant to this site) the following should be referred to:



- maintenance of ecosystems criteria specified for protection of marine water ecosystems in ANZECC/ ARMCANZ 2000. For this site, the most sensitive beneficial use to be protected is Port Philip Bay, which is considered to be a marine water ecosystem slightly impacted by nearby human activities. As such, the 95% protection of species guideline for a 'slightly modified' marine water environment is considered the most suitable criteria for groundwater assessment at the site. Note that, under natural conditions, the groundwater flow direction would be towards Port Phillip Bay; hence the protection of marine environments would be relevant. However, due to the surrounding sewer system(s) controlling local groundwater flow in the Brighton Group sediments, groundwater from beneath the site is captured and none of the groundwater on site discharges to Port Phillip Bay. Therefore, protection of ecosystems would only be relevant if the sewers were sealed and, therefore, no longer controlled local groundwater flow;
- potable water supply (acceptable) those specified for health in the National Health and Medical Research Council (NHMRC), 2004 and 2011, Australian Drinking Water Guidelines;
- potable mineral water supply those specified for potable mineral water in the Australian Food Standards Code (1987) Standard 08 Mineral Water;
- agriculture, parks and gardens those specified in ANZECC 2000 for irrigation;
- stock watering those specified for livestock in the ANZECC 2000 guidelines;
- Industrial Water Use those specified for industrial use in the ANZECC 2000 guidelines;
- primary contact recreation those specified for primary contact recreation in the NHMRC and ARMCANZ (2008) Australian drinking water guidelines. Consumption of water during recreational events (i.e. in creeks or swimming pools using groundwater) has been considered, with criteria for non-volatile contaminants being set at 20 times the health criteria based on the assumption that recreational swimmers consume 100 mL of water per session, while NHMRC (2008) drinking criteria assume 2 L/day potable water consumption (also reported in ANZECC 1992, p3-7); and
- buildings and structures The SEPP GoV states that concentrations of pH, sulfate and redox potential should be considered but does not specify a reference. Therefore, the Australian Standard AS3600-2001 Concrete Structures is referred to.

For the purpose of this assessment all beneficial uses described above will be considered with the exception of the following:

potable mineral water supply – this beneficial use is excluded as the groundwater does
not display effervescent qualities as required under the definition of "potable mineral
water" in the SEPP GoV and the area is not within a designated mineral water
production zone.

The adopted investigation levels for groundwater are dictated by the potential beneficial uses of groundwater. These are primarily defined by the SEPP (1997) *GoV*. Where the SEPP *GoV* does not specify contaminant limits, the ANZECC/ ARMCANZ (2000) *Australian and New Zealand guidelines for fresh and marine water quality* and NEPM (1999) *Groundwater investigation levels* (GILs) are consulted. In Victoria, the NEPM levels are generally used in preference to ANZECC/ ARMCANZ criteria for all beneficial uses other than ecological receptors.



The reason for this is that the ecological receptor for an aquifer is the nearest potential surface receiving water or discharge zone for that aquifer, which is controlled under the SEPP *Waters of Victoria* (WoV). The SEPP WoV refers to ANZECC/ ARMCANZ 2000.

In the absence of relevant Australian based criteria for various compounds, the Dutch Intervention Levels are often referenced. This is most commonly undertaken for total petroleum hydrocarbons (TPH) in water by use of the 600 µg/L mineral oil intervention level. If TPH compounds are detected, it is considered more important to focus on benzene, toluene, ethyl-benzene and xylene (BTEX) and polycyclic aromatic hydrocarbon (PAH) compound levels in determining potential human health and ecosystem risks.

The 'Deed of Agreement', executed between CoPP, Melbourne Water and South East Water (Section 5.2.2), states that Melbourne Water and South East Water will accept groundwater discharging from Gasworks Arts Park to surrounding sewers 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 or <u>does not comply with trade waste</u> requirements or safety requirements imposed by the Victorian Government from time to time".

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 Appendix G. Please note Melbourne Water standards for discharge could not be identified.

The following guidelines have also been used as guiding documents:

- EPA Victoria (2000) EPA Information Bulletin Publication 669 Groundwater sampling guidelines; and
- Victoria Government Gazette (1997) Variation of the State environment protection policy (Waters of Victoria) insertion of Schedule F6. Waters of Port Phillip Bay.

It is important to note that the LOR for selected analytes was noted (following analysis) to exceed selected criteria. These include:

- Se (LOR 0.01 mg/L) is higher than the ecosystem criteria (0.003 mg/L);
- anthracene (LOR 1 ug/L) is higher than the ecosystem criteria (0.4 ug/L); and
- BaP (LOR 0.5 ug/L) is higher ecosystem criteria (0.2 ug/L), health criteria (0.01 ug/L) and recreation criteria (0.2 ug/L).

Environmental Earth Sciences will ensure that the LOR is reduced (to below criteria) during future rounds of monitoring (if required).



7 FIELD ASSESSMENT

Field work as part of this groundwater investigation (on- and offsite) included:

- a groundwater gauging round, including the recording of groundwater standing water levels (SWLs), assessment of the presence of NAPL and well serviceability checks;
- the installation of five shallow groundwater wells:
 - o three wells were drilled onsite within the South Port Nursing Home (GW39) and Gasworks park along the boundary of the Alinta site (GW40 and GW41); and
 - two wells were drilled offsite to the north-east (GW37 and GW38);
- the installation of three deep groundwater wells:
 - two wells were drilled onsite, one located in the south-eastern corner (GW42D)
 and the north western corner (GW43D) of the site; and
 - o one well was drilled offsite to the north east (GW44D).
- development of all onsite and offsite groundwater wells, including existing and newly installed wells:
- the collection of groundwater samples from thirty one (31) existing groundwater wells and eight recently installed wells for laboratory analysis of chemicals of concern (CoC), following adequate purging, stabilisation and recording of field parameters;
- the collection of groundwater levels from the groundwater wells and interpretation of the water table surface and groundwater flow directions; and
- evaluation of aquifer properties by slug testing (i.e. rising and falling head tests) selectively undertaken on six groundwater wells.

7.1 Groundwater well installation

Eight new groundwater wells were installed onsite and offsite between 28 February and 8 March 2011 by NUMAC Drilling Services (NUMAC) under the direct supervision of Environmental Earth Sciences VIC personnel.

The location of each well was selected to:

- further characterise and delineate groundwater pollution offsite to the east of the site (GW37 and GW38);
- investigate if Gasworks Park is a potential source of groundwater pollution offsite towards the Alinta Site (north) (GW40 and GW41);
- assess the potential for contamination of deeper groundwater on- and off-site due to onsite pollution (GW42D, GW43D and GW44D);
- further delineate the extent and source areas of contaminated groundwater (GW39 and GW42D); and
- assess the migration of CoC to down-gradient receptors (GW37 and GW38).

The location of each well is presented in Figure 3 and the rationale for each well location is described in Table 5. All well locations were approved by the site Environmental Auditor, Dr. Peter Nadebaum (GHD) prior to the commencement of field works.



7.1.1 Shallow Brighton Group wells

Shallow groundwater wells (GW37 to GW41) were constructed to monitor across the watertable. The shallow wells were installed to total depths ranging between 10.0 and 11.5 metres below ground level (mbgl) and constructed of Class 18 uPVC with diameter 50 mm and slotted screen (0.4 mm slot apertures and 4 mm slot spacing) placed across the saturated zone, in an augered borehole of diameter 125 mm. Each installation was completed with filter pack sand (16/30 grade) completely filling the annular space from the base of the borehole to a maximum of 1.0 m above the screen, a bentonite seal of thickness 0.5 m placed above the sand and cement grout (with 5% bentonite) placed within the remaining annulus to ground level.

Well construction details are presented in Table 6, with geological borelogs presented in Appendix A. Borelogs were logged in accordance with Environmental Earth Sciences, 2008 – *Company logging manual.*

7.1.2 Deep Brighton Group wells

Figures 4 and 5 illustrate the construction details of deeper groundwater wells GW42D, GW43D and GW44D. These deep Brighton Group wells were installed using telescopic construction techniques and mud rotary drilling techniques to prevent cross contamination between shallow and deep sediments, as follows:

- an initial borehole 300 mm in diameter was drilled through fill material to depths between 2.5 and 3.6 mbgl using a solid flight auger. This interval was sealed off using 250-mm internal diameter PVC casing to the base, cemented (quick set) to surface level and allowed to cure;
- a 190-mm diameter borehole was then drilled within the initial cased interval using mud rotary techniques. The borehole was extended into the upper Brighton Group to a depth of between 12.0 and 13.5 mbgl). The upper Brighton Group was then sealed off using 125 mm internal diameter PVC casing to the base, grouted (via tremie pipe) to surface level and allowed to cure: and
- a 125-mm diameter borehole was then drilled through the base of the 125-mm cased borehole using mud rotary techniques. The borehole was extended through the Brighton Group to the OVB, at approximately 17.0 mbgl. The wells were completed using 50 mm internal diameter PCV to total depths between 17.0 and 17.8 mbgl with a 3 m slotted screen (0.4 mm slot apertures and 4 mm slot spacing) positioned at the base of the Brighton Group. Each installation was completed with filter pack sand (16/30) placed up to 0.5 m above the screen, 0.5 m bentonite seal placed above the sand and cement grout (5% bentonite) filling the remaining annulus to ground level.

Well construction details are presented in Table 6 and Figures 4 and 5, with geological borelogs presented in Appendix A. Borelogs were logged in accordance with Environmental Earth Sciences, 2008 – *Company logging manual*.

Drilling mud produced during well installation was stored onsite in sealed, appropriately labelled steel drums.

7.1.3 Well development

All existing and newly installed groundwater wells were developed to optimise their hydraulic connection to the aquifer and remove drilling residues.



Development of the three deep wells (GW42D, GW43D and GW44D) was undertaken by air lifting on 9 March 2011. Groundwater extracted during airlifting was directed through a T-piece PVC pipe and collected in 200 L storage drums and awaiting offsite disposed to a facility licensed to accept such waste.

Newly installed shallow wells (GW37 to GW41) were developed between 21 and 22 March 2011 by a combination of pumping, bailing and surging in reference to EPA Publication 669, 2000 – *Groundwater sampling guidelines*. Additionally, all existing groundwater wells (GW1 to GW36) were re-developed to remove sediment and optimise aguifer connectivity.

Wells GW8, GW18, GW19, GW20, GW21, GW22, GW23 and GW24 could not be located during the initial development program. These wells were later located using a surveyor on 13 April 2011 and were re-developed (along with the three deep groundwater wells (GW42D to GW44D), by pumping, bailing and surging and were allowed to equilibrate prior to groundwater sampling.

Details of the groundwater well development program, including purged volumes and field observations, are presented in Table 7.

7.2 Groundwater sampling methodology

Groundwater sampling at each existing and newly installed groundwater well was undertaken between 18 and 21 April 2011, with the exception of GW7 which was sampled on 2 May 2011. Prior to purging, a multi-phase dipper was used to measure the SWL in each well and to assess the presence of LNAPL or DNAPL, if any.

Sampling was undertaken via low flow (Micro-purge) sampling techniques, with the pump inlet placed at depths within the screen interval. Purging was continued until field parameters [pH, electrolytic conductivity (EC), oxidation/reduction potential (ORP or pe), dissolved oxygen (DO), temperature and flow rate (yield)] had stabilised (refer to Table 8) and a sustainable sampling flow rate (i.e. minimal draw down) had been established to confirm that a representative sample of the aquifer was collected. Groundwater sampling records have been provided in Appendix I.

Groundwater well GW4 displayed insufficient yield to sustain an adequate flow rate with minimal drawdown. As such, purging and collection of field parameters was continued using a hand bailer until the well was purged dry and it was sampled following adequate recharge.

Groundwater samples were collected in amber glass bottles, volatile vials or plastic bottles depending on the individual analytes and required preservatives, labelled with the groundwater well number, site reference and date before being placed in a cooler with ice. All sampling procedures were undertaken in accordance with Environmental Earth Sciences, 2009, 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 and tubing at each groundwater well; and
- thorough washing of all re-used sampling equipment (i.e. pump and steel cable) with detergent (Decon 90) water, then double rinsing with clean water and drying before the collection of each sample.



Samples analysed for metals concentrations were collected without filtering in the field and without preservative. These samples were filtered by the laboratory before analysis. Further discussion on this procedure, and the results obtained, is provided in Section 10.3.

7.3 Groundwater field physical assessment

Following sample collection, slug tests (falling and rising head) were undertaken in selected wells utilising transducers. The slug tests were undertaken to confirm the hydraulic conductivity data (of the shallow water bearing zones) derived from previous assessments and evaluate the hydraulic conductivity of the deeper water bearing zones within the Brighton Group sediments.

Slug tests were undertaken on shallow wells GW7, GW37, GW30 and GW40 and deeper wells GW42 and GW44, as follows:

- install pressure transducer at the base of the well;
- measurement and recording of SWL;
- full immersion of a solid slug of approximate volume 1 litre to initiate falling head test;
- measurement of the recovery of groundwater level (falling head test);
- removal of the slug to initiate rising head test;
- measurement of the recovery of groundwater level (rising head test);
- assessment of data quality, preparation of tables and graphs of displacement vs. time for analysis;
- estimation of hydraulic conductivity (K) values for falling and rising head tests using the Cooper-Bredehoeft Papadopulos (CBP) method and Bower-Rice method; and
- estimation of the mean K value across the site.

Aquifer property estimates from the slug tests are discussed further in Section 10.1 and presented in Table 10 and Appendix B.

Groundwater levels were measured in April 2011. The groundwater elevations are presented in Table 9 and the interpreted water table surface is presented in Figure 6.

8 LABORATORY ANALYSIS

The schedule for laboratory analysis of groundwater samples was based on findings from historical investigations. All groundwater analysis was undertaken by Australian Laboratory Services (ALS) and SGS Australia, both NATA accredited. Laboratory transcripts for groundwater samples are presented in Appendix C.

8.1 Laboratory analysis

Groundwater was collected for organic and inorganic analysis from thirty nine groundwater wells during the April 2011 groundwater sampling event. Each groundwater sample was analysed for the following analytical schedule:

• 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, free and weak acid dissociable (WAD) cyanide;
- TPHs and total recoverable hydrocarbons (TRH);
- monocyclic aromatic hydrocarbons (MAHs) including BTEX;
- PAHs; and
- volatile organic compounds (VOCs).

Seven intra- and one inter- laboratory duplicate samples were collected during sampling and selectively analysed for a range of CoPC for quality control purposes. Please note that four intra- and four inter-laboratory duplicates were collected during fieldwork, however confusion during sample laboratory sorting resulted seven intra-laboratory and one inter-laboratory samples being analysed. The implications of not having the correct number of inter-laboratory duplicates analysed are discussed in Appendix D.

The results of organic and inorganic laboratory analysis are discussed in Section 10, and complete laboratory transcripts are presented in Appendix C.

8.2 Procedures for quality assurance and quality control

Quality control (QC) is achieved by using NATA registered laboratories using ASTM standard methods supported by internal duplicates, the checking of high, abnormal or otherwise anomalous results, against background and other chemical results for the sample concerned.

Quality assurance (QA) is achieved by confirming field or anticipated results based upon the comparison of field observations with laboratory results. In addition, the laboratory undertakes additional duplicate analysis as part of their internal QA program on the basis of one duplicate for every 20 analysed.

Field observations are compared with laboratory results when they are not as expected and confirmation, re-sampling and re-analysis are undertaken if results cannot be correlated. In brief, correlations of field-measured pH with laboratory measurements were reliable with an average recorded relative percentage difference (RPD) of 2.9%. The laboratory-determined total dissolved salts (TDS) to field electrolytic conductivity (EC in μ S/cm) relationship was, on average, 0.7, which provides confidence in the results obtained.

The potential for cross contamination of samples is considered to be negligible due to sampling decontamination and transportation procedures. This was confirmed after the analysis of rinsate and trip samples collected during each round of sampling reported concentrations of CoPC below the laboratory LOR. Full laboratory transcripts and chain of custody forms are presented in Appendix C, while further discussion on QA/QC is provided in Appendix D.



9 GROUNDWATER CHEMISTRY RESULTS

9.1 Organic groundwater analysis

For ease of interpretation, all organic laboratory groundwater results are presented in Tables 15-18. In addition, Appendix H presents figures illustrating concentrations of PAHs, BTEX and TPH. Only detectable organic results have been provided, with all other concentrations being less than the laboratory LOR.

Organic compounds which exceeded adopted site criteria include:

- PAH compound concentrations as follows:
 - o naphthalene for OS wells GW24 (1,820 μg/L) and GW44D (142 μg/L);
 - phenanthrene concentrations ranging between 3.4 and 6.2 μg/L in OS wells GW3, GW4 and GW41;
 - o anthracene concentrations ranging between 1.1 and 2.1 μ g/L in OS wells GW3, GW4 and GW41;
 - o fluoroanthene concentrations ranging between 2.1 and 8.4 μ g/L for OS wells GW3, GW4, GW40, GW41 and GW43D; and
 - benzo(a)pyrene concentrations ranging between 0.9 and <53.8 μg/L for OS wells GW4, GW24, GW40, GW41 and GW44D.
- styrene concentration of 193 μg/L in OS well GW24.
- benzene concentrations ranging between:
 - \circ 2 6,350 µg/L for OS wells GW3, GW23, GW24, GW39, GW42D and GW44D;
 - 5 μg/L for NW wells GW32; and
 - \circ 13 42 µg/L for NE wells GW8, GW37 and GW38.
- toluene concentrations for OS wells GW24 (318 μg/L) and GW44D (712 μg/L);
- ethylbenzene concentrations for OS wells GW24 (111 μg/L), GW23 (13 μg/L) and GW44D (46 μg/L);
- xylene(s) concentration for OS wells GW24 (2,290 μg/L) and GW44D (435 μg/L);
- TPH Fraction C_6 - C_9 concentrations for OS wells GW24 (9,780 μ g/L), GW42D (470 μ g/L) and GW44D (3,380 μ g/L); and
- TPH fraction C_{10} - C_{36} concentrations for:
 - OS wells GW3 (2,010 μg/L), GW4 (1,080 μg/L), GW19 (1,250 μg/L), GW23 (1,800 μg/L), GW24 (20,500 μg/L), GW39 (2,170 μg/L), GW42D (4,720 μg/L) and GW44D (285,000 μg/L);
 - ο NE wells GW8, (1,710 μg/L), GW37 (2,000 μg/L) and GW38 (5,350 μg/L); and
 - SE wells GW11 (770 μg/L).

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 37.6% to 100% of previously identified TPH compounds across the analysed samples were confirmed to be from primarily natural organic influences such as humic and fluvic 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 GW24 (12,850 μg/L) and GW44D (57,800 μg/L); and
- NE well GW38 (1,300 μg/L).

TPH speciation analysis undertaken on samples GW24, GW38 and GW44D indicates the presence of aromatic hydrocarbons only, which is consistent 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.

Sample GW23 reported TPH concentrations in excess of adopted criteria, however was not submitted for silica gel clean-up. It considered likely that TPH concentrations in GW23 are the result of natural organic influences such as humic and fluvic acids rather than attributed to true petroleum hydrocarbons. This is based on the location of GW23, the low BTEX and PAH concentrations and the silica gel clean-up results from other samples.

9.2 Inorganic groundwater analysis

Inorganic laboratory groundwater results are presented in Tables 11-14. In addition, Appendix H presents figures illustrating concentrations of As, Co/Cu and Ni/Zn.

The mean pH measured in the four groups of wells were 6.34 in the SE wells, 6.62 in the OS wells, 7.01 in the NE wells and 7.30 in the NW wells.

The following water quality indicators exceed adopted criteria:

- pH levels indicated groundwater was too acidic in:
 - four OS wells GW19, GW21, GW22 and GW42D for health criteria (pH 6.5-8.5), with wells GW19 (pH 5.43) and GW21 (pH 5.44) also unacceptable for trade waste (pH 6.0-10.0);
 - o NE well GW8 (pH 6.27) for health criteria; and
 - o five SE (background) wells (GW10, GW11, GW13, GW15 and GW25) which recorded pH concentrations ranging between 5.23-6.45, unacceptable for health criteria, with wells GW10 (pH 5.23) and GW11 (pH 5.55) also unacceptable for trade waste.
- TDS concentrations exceeded:
 - o irrigation criteria (500 mg/L) in all wells with exception to SE wells GW11, GW13, GW14, GW15, GW16 and GW25;
 - health criteria (1,000 mg/L) in all OS wells, with exception to GW22, and all NW and NE wells. No SE wells contained TDS concentrations which exceeded health criteria; and
 - livestock watering guideline (3,000 mg/L) in six OS wells (GW03, GW24, GW35, GW39, GW42D, GW43D and GW44D), three NW wells (GW33, GW34and GW36) and three NE wells (GW27, GW30 and GW38).
- Na⁺ concentrations exceeded irrigation criteria (120 mg/L) in:
 - o OS wells GW1, GW4, GW31, GW35, GW42D, GW43D and GW44D;
 - NW wells GW6, GW33, GW34 and GW36;



- NE wells GW7, GW8, GW26, GW27, GW28, GW29, GW30 and GW38; and
- SE wells GW9, GW10, GW12 and GW25.
- Cl⁻ concentrations exceeded:
 - health criteria (250 mg/L) in eight OS wells (GW1, GW31, GW35, GW40, GW41, GW42D, GW43D and GW44D), three NW wells (GW6, GW33and GW36) and six NE wells (GW8, GW26, GW27, GW28, GW29 and GW30); and
 - o irrigation criteria (700 mg/L) in four OS wells (GW1, GW35, GW42D and GW43D), two NW wells (GW33and GW36) and three NE wells (GW27, GW29 and GW30).
- Mg concentrations exceeded livestock watering criteria (600 mg/L) in OS deep wells GW42D (787 mg/L) and GW43D (694 mg/L); and
- F concentrations exceeded:
 - o irrigation criteria (1 mg/L) in OS wells GW1, GW3, GW3, GW31, GW35 and GW41, NW wells GW6, GW32, GW33 and GW36, and NE wells GW7, GW28, GW30 and GW37:
 - health criteria (1.5 mg/L) in OS well GW31, NW wells GW32, GW35 and GW36, and NE well GW30;
 - o livestock criteria (2 mg/L) in OS well GW31 and NW well GW32.

The following inorganic CoPC and nutrients exceed adopted criteria:

- SO₄²⁻ concentrations in:
 - eight OS wells (GW3, GW19, GW21, GW24, GW39, GW42D, GW43D and GW44D) exceeded health criteria (500 mg/L), one OS well (GW42D) exceeded recreation criteria (10,000 mg/L), six OS wells (GW3, GW24, GW39, GW42D, GW43D and GW44D) exceeded livestock criteria (1,000 mg/L)and all OS wells with exception to GW40 exceeded trade waste criteria (100 mg/L). Concentrations of SO₄²⁻ in OS wells ranged between 28 and 14,800 mg/L;
 - three NW wells (GW33, GW34 and GW35) exceeded health criteria, two NW wells (GW33 and GW34) exceeded livestock criteria and all NW wells with exception to GW6 exceeded trade waste criteria. Concentrations of SO₄²⁻ in NW wells ranged between 72 and 1,930 mg/L;
 - o five NE wells (GW8, GW27, GW30, GW37 and GW38) exceeded health criteria, two NE wells (GW8 and GW37) exceeded livestock criteria and all NE wells exceeded trade waste criteria. Concentrations of SO₄²⁻ in NE wells ranged between 167 and 1,510 mg/L; and
 - six SE wells (GW10, GW12 to GW15 and GW25) exceeded trade waste criteria.
 Concentrations of SO₄²⁻ in SE wells ranged between 46 and 303 mg/L.
- nitrate concentrations in OS well GW4 (69.6 mg/L), NE well GW29 (62.9 mg/L) and SE well GW9 (93 mg/L) exceeded the health criteria (50 mg/L);
- total CN concentrations in:
 - all OS wells with exception to GW43D exceeded ecosystem criteria (0.004 mg/L), eight OS wells exceeded health criteria (0.08 mg/L) and one OS well exceeded recreation criteria (1.6 mg/L). Concentrations of total CN in OS wells ranged between <0.004 and 3.98 mg/L;



- all NW wells exceeded ecosystem criteria, and two NW wells (GW32 and GW34) exceeded health criteria. Concentrations of total CN in NW wells ranged between 0.006 and 0.24 mg/L;
- all NE wells with exception to GW27, GW29 and GW30 exceeded ecosystem criteria and GW37 exceeded health criteria. Concentrations of total CN in NE wells ranged between <0.004 and 0.39 mg/L; and
- five SE wells (GW11, GW13, GW14, GW15 and GW25) exceeded ecosystem criteria. Concentrations of total CN in SE wells ranged from <0.004 and 0.014 mg/L.

• NH₃ concentrations in:

- all OS wells with exception to GW4 and GW41 exceed ecosystem criteria (0.91 mg/L), health criteria (0.5 mg/L aesthetic consideration only) and recreation criteria, excluding GW22 (1.5 mg/L). Six OS wells (GW3, GW23, GW24, GW39, GW42D and GW44D) also exceeded trade waste criteria (200 mg/L). Concentration of NH4+ in OS wells ranged between 0.29 and 2,170 mg/L;
- o four NW wells (GW32, GW33, GW35 and GW36) exceeded ecosystem, health and recreation criteria. Concentrations of NH4+ in NW wells ranged between 0.41 and 12.5 mg/L;
- six NE wells (GW7, GW8, GW26, GW28, GW37 and GW38) exceeded ecosystem criteria, seven NE wells (GW7, GW8, GW26, GW27, GW28, GW37 and GW38) exceeded health criteria, five NE wells (GW7, GW8, GW28, GW37 and GW38) exceeded recreation criteria and three NE wells (GW8, GW37 and GW38) exceeded trade waste criteria. Concentrations of NH4+ in NW wells ranged from 0.10 and 511 mg/L; and
- three SE wells (GW9, GW14 and GW25 exceeded health criteria and GW25 also exceeded ecosystem criteria. Concentrations of NH4+ in SE wells ranged from <0.01 and 2.11 mg/L.

The following heavy metals CoPC exceed adopted criteria:

- Al concentration in OS well GW42D (3.91 mg/L) exceeded health (aesthetics) criteria (0.2 mg/L);
- As concentrations in:
 - all OS wells with exception to GW43D exceeded ecosystem criteria (0.0023 mg/L), all OS wells with exception to GW40 and GW43D exceeded health based criteria (0.007 mg/L), three OS wells (GW19, GW21 and GW31) exceed recreation criteria (0.14 mg/L), one OS well exceeds livestock criteria (0.5 mg/L) and three OS wells exceeded irrigation criteria (0.1 mg/L). Concentrations of As onsite ranges between 0.002 and 0.799 mg/L;
 - all NW wells with exception to GW6 exceeded ecosystem and health criteria and three wells (GW32, GW34 and GW35) exceeded recreation criteria.
 Concentrations of As in the NW wells ranges between 0.002 and 0.396 mg/L;
 - all NE wells with exception to GW29 exceeded ecosystem criteria, all NE wells with exception to GW29 and GW27 exceeded health criteria, GW28 exceeded recreation and irrigation criteria. Concentrations of As in NE wells ranges between 0.002 and 0.189 mg/L; and
 - o five SE wells (GW9, GW10, GW12, GW13 and GW14) exceeded ecosystem criteria and GW12 exceeded health criteria. Concentrations of As in SE wells ranged between <0.001 and 0.008 mg/L.



- B concentrations in all OS wells (with exception to GW4, GW24 and GW40), all NW wells, all NE wells (with exception to GW26, GW29 and GW30) and SE wells GW13-GW16 and GW25 exceeded irrigation criteria (0.5 mg/L). The concentration of B in GW34 (NW well) was 6.88 mg/L, exceeding health criteria (4 mg/L), livestock criteria (5 mg/L) and irrigation criteria (0.5 mg/L);
- Cd in OS well GW43D (0.0025 mg/L) exceeded health criteria (0.02 mg/L);

• Co concentrations in:

- ten OS wells (GW1, GW3, GW19, GW21, GW22, GW23, GW39, GHW42D, GW43D and GW44D) exceeded ecosystem criteria (0.001 mg/L) with three of these wells (GW42D, GW43D and GW44D) also exceeding irrigation criteria (0.05 mg/L). GW42D also exceeded livestock criteria (1.0 mg/L) with a concentration of 9.66 mg/L. Concentrations of Co in OS wells ranged between <0.001 and 9.66 mg/L;
- o four NW wells (GW33 to GW36) exceeded ecosystem criteria. Concentrations of Co in NW wells ranged between <0.001 and 0.005 mg/L;
- seven NE wells (GW8, GW26, GW27, GW29, GW30, GW37 and GW38)
 exceeded ecosystem criteria. Concentrations of Co in NE wells ranged between
 <0.001 and 0.016 mg/L; and
- two SE wells (GW14 and GW15) exceeded ecosystem criteria. Concentrations of Co in SE wells ranged between <0.001 and 0.008 mg/L.

Cu concentrations in:

- o nine OS wells (GW1, GW4, GW21, GW22, GW24, GW31, GW42D, GW43D and GW44D) exceeded ecosystem criteria (0.013 mg/L). Concentrations of Cu in OS wells ranged between <0.001 and 0.051 mg/L;
- all NW wells exceeded ecosystem criteria with concentrations ranging between 0.002 and 0.006 mg/L;
- all NE wells with exception to GW7 and GW26 exceeded ecosystem criteria.
 Concentrations of Cu in NE wells ranged between <0.001 and 0.005 mg/L;
- all SE wells with exception to GW9, GW14 and GW16 exceeded ecosystem criteria. Concentrations of Cu in SE wells ranged between <0.001 and 0.007 mg/L.

Fe concentrations in:

- ten onsite wells (GW01, GW03, GW04, GW19, GW21, GW23, GW39, GW42D, GW43D and GW44D) exceeded irrigation criteria (0.2 mg/L), with one well (GW19) also exceeding trade waste criteria (100 mg/L). Fe concentrations in OS wells ranged between <0.05 and 309 mg/L; and
- two NE wells (GW8 and GE37) exceeded irrigation criteria. Concentrations within NE wells ranged between <0.05 and 3.5 mg/L.

Pb concentrations in:

- two OS wells (GW21 and GW22) exceeded ecosystem criteria (0.0044 mg/L). Concentrations of Pb in OS wells ranged between <0.001 and 0.01 mg/L;
- one NE well (GW30) exceeded ecosystem criteria. Concentrations of Pb in NE wells ranged between <0.001 and 0.01 mg/L; and
- one SE well (GW13) exceeded ecosystem criteria. Concentrations of Pb in SE wells ranged between <0.001 and 0.008 mg/L.



Mn concentrations in:

- seven OS wells (GW3, GW19, GW21, GW39, GW42D, GW43D and GW44D) exceeded health criteria (0.5 mg/L), with GW19, GW42D and GW44D also exceeding trade waste and recreation criteria (10 mg/L). Concentrations of Mn ranged between 0.01 and 14.2 mg/L except for GW42D with an outlier concentration of 120 mg/L, which exceeds health, recreation and trade waste criteria:
- one NW well (GW35) exceeded health criteria with a concentration of 0.792 mg/L; and
- three NE wells (GW08, GW26 and GW38) also exceeded health criteria.
 Concentrations of Mn within the NE wells ranged between 0.138 and 1.97 mg/L.

Ni concentrations in:

- six OS wells (GW19, GW22, GW23, GW39, GW42D, GW43D and GW44D) exceeded health criteria (0.02 mg/L), GW42D and GW44D also exceeded ecosystem criteria (0.07 mg/L). GW42D also exceeded recreational criteria (0.4 mg/L), livestock criteria (1 mg/L) and irrigation criteria (0.2 mg/L) with a concentration of 2.82 mg/L;
- one NE well (GW38) exceeded ecosystem criteria, three NE wells (GW8, GW27 and GW38) exceeded health criteria and GW38 exceeded irrigation criteria. Concentrations of Ni within the NE wells ranged between 0.005 and 0.283 mg/L;
- o one SE well (GW10) exceeded health criteria with a concentration of 0.037 mg/L.
- Se concentrations in OS well GW42D (0.03 mg/L) exceeded ecosystem, health, livestock and irrigation;

• Zn concentrations in:

- nine OS wells (GW1, GW3, GW19, GW21, GW22, GW31, GW42D, GW43D and GW44D) exceeded ecosystem criteria (0.015 mg/L); concentrations ranging between <0.005 and 0.129 mg/L except for GW42D with an outlier concentration of 2.2 mg/L which also exceeds irrigation criteria (2.0 mg/L);
- o five NE wells (GW7, GW8, GW27, GW29 and GW30) exceeded ecosystem criteria with concentrations ranging between <0.005 and 0.052 mg/L;
- o four SE wells (GW10, GW13, GW15 and GW16) exceeded ecosystem criteria with concentrations ranging between <0.005 and 0.045 mg/L.

10 DISCUSSION AND INTERPRETATION OF NEW DATA

10.1 Physical hydrogeology

Wells GW37 to GW44D were installed in sands and clays of the Brighton Group. Groundwater within this formation was generally first encountered at depths ranging between 7.5 and 8.0 mBGL. The depths of the new wells are described in Section 7. Five of the new wells were screened across the water table, but GW42D, 43D and 44D were installed at the base of the Brighton Group, approximately 6-10 m below the water table.



Following installation, each new groundwater well was surveyed at the top of casing and ground level relative to the Australian Height Datum (AHD) level by a qualified surveyor. Surveyed well levels and static water level (SWL) measurements undertaken in April 2011 are presented in Table 9. Hydraulic heads from the shallow wells were used to generate the watertable surface shown in Figure 6. The contours were generated by hand, with consideration of the sewer alignments, rather than using contouring software.

Hydraulic heads from both the shallow wells and deep wells GW42D, GW43D and GW44D are shown in cross section in Figures10 and 11. Due to their relatively high salinity, hydraulic heads in GW42D, GW43D and GW44D shown in Figures 10 and 11 were first corrected to equivalent freshwater heads, as described in the footer of Table 9. These corrections were minor and did not alter the interpreted direction of the vertical gradients at these locations. Figure 11 shows that small upward hydraulic gradients were observed at GW42D and GW43D. In contrast, a downward gradient was observed at GW44D, close to the eastern corner of the site.

The different vertical gradients at different locations are not considered to be significant. They could be caused by different rates of recharge at the water table in both location across the site and with time (due to short-term variations in climate). Localised vertical gradients could also be due to heterogeneities within the Brighton Group.

Figure 6 shows that, consistent with previous data, all hydraulic heads on site are significantly below 0 m AHD. A watertable that is significantly below 0 m AHD throughout the site would not be possible without an anthropogenic control over the groundwater flow. The drawdown of the watertable to levels that are several metres below sea level is caused by the sewers located along Bridport Street, Graham Street and Pickles Street. Figures 10 and 11 show the site hydrogeology and the sewers in cross section; the lines of section are shown in Figure 6. Groundwater beneath the site flows towards groundwater depressions associated with the sewers located along Foote Street, Graham Street and Pickles Street.

The horizontal hydraulic gradient over much of the site is in the range 0.006 to 0.01. However, it steepens to greater than 0.01 towards the sewers on Bridport Street, Graham Street and Pickles Street.

The consistent drawdown associated with and gradient towards the South Yarra Main Sewer, Hobson's Bay Main Sewer and, to a lesser extent, Pickles Street sewer, indicate that groundwater leakage into the sewers is continuous along the sewer length rather than in discrete zones. This is consistent with previous findings (Golder Associates, 2006a). Due to the significant permanent drawdown caused by these three sewers to several metres below natural groundwater levels, all groundwater from the site discharges to these sewers, with no migration across the sewers.

There is a sewer aligned along Richardson Street at an elevation of approximately -3.5 mAHD which is the north east boundary of the site. Figure 10 shows that the water table is more than 1 m below an elevation of -3.5 mAHD, along the length of Richardson Street, due to the drawdown caused by the other, deeper sewers. Therefore, if this sewer leaks it can be expected to have outward flow into the groundwater rather than inward flow from the groundwater.

Groundwater levels are relatively high within the north central portion of the site, with a groundwater divide located approximately along the site boundary between Gasworks Park and the Alinta site.



Figure 13 illustrates the conceptual groundwater flow system within the sediments of the Brighton Group without the vertical exaggeration used in Figures 10 and 11. This figure is intended to show the interpreted flow system in cross section from a location in the north-central part of the site to the site perimeter either on Foote Street or Graham Street. (Figure 6 shows that flow from the north-central part of the site is radial towards both Foote Street and Graham Street.)

Figure 13 shows that, in reality, the saturated thickness of the Brighton Group is small in comparison to the length of the horizontal flow path and that flow in the saturated zone is expected to be predominantly horizontal. As the sewers are within a few metres of the base of the Brighton Group, and the saturated thickness is generally 10 metres or less throughout the site area, lateral groundwater flow towards the sewers takes place through the full saturated thickness of the formation. From the flow paths shown in Figure 13, the groundwater near the base of the Brighton Group and near the discharge end of the flowpath (i.e. near the sewer) is likely to be the oldest groundwater in the flow system.

Based on the slug test analyses (Table 10), the median hydraulic conductivity in the shallow Brighton Group wells GW7, GW37, GW30 and GW40 was approximately 0.5 m/day and the median hydraulic conductivity evaluated from deeper wells GW42 and GW44 was significantly lower, at approximately 0.1 m/day. The mean hydraulic conductivity of the Brighton Group was estimated to be 0.3 m/day and the maximum hydraulic conductivity evaluated from the slug tests was 1.7 m/day.

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 30 m/yr, based on the maximum hydraulic conductivity of 1.7 m/day evaluated from slug tests, an effective porosity of 0.2 and a hydraulic gradient of 0.01. 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 5 m/yr.

If the decrease in hydraulic conductivity with depth noted in the slug tests is representative of conditions across the site, it can be expected that groundwater flow through the basal Brighton Group close to the OVB would be slower than groundwater flow through the Brighton Group close to the water table.

10.2 Estimated groundwater flux to sewers

The flux of groundwater to the South Yarra Main Sewer, Hobsons Bay Main Sewer and Pickles Street sewers has been estimated from observations of hydraulic heads and estimates of Brighton Group aquifer properties using the formula Q=KiA.

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 m³/day (3 ML/yr).

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 0.0035 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 1.3 m³/day (0.5 ML/yr).



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 0.003 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 0.9 m³/day (0.3 ML/yr).

Thus, the total discharge to the surrounding sewers from Gasworks Park and Southport Community Nursing Home is estimated to be 11 m³/day, (4 ML/yr). This is approximately 5 times the rate previously estimated by Golder Associates (Golder Associates, 2006a). A rate of 11 m³/day would be equivalent to a vertical recharge flux of approximately 100 mm/yr over the area of the Gasworks site. It is possible that a small proportion of the groundwater discharging from the site to the sewers originated as upward flow from the Older Volcanics. Therefore, the recharge rate on site may be slightly less than 100 mm/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. Although the new estimate of the total flux to the sewer system is greater than the previous estimate by Golder Associates, the calculated flux is orders of magnitude lower than the typical daily flow rate in the sewer.

10.3 Hydrogeochemistry

Results of the inorganic analysis of groundwater are presented in Tables 11-14. Several inorganic parameters were identified to be in excess of applicable guidelines and are discussed further in Section 11.4 *'Beneficial uses of groundwater'*.

Chart 1 and Chart 2 present Schoeller Plots of the shallow Brighton Group groundwater chemistry and the deep Brighton Group groundwater chemistry respectively. Chart 3 is a Piper Plot of all the 2011 groundwater data. Based on the results presented in Tables 11-14 and Charts 1, 2 and 3, the groundwater across the site can be characterised in terms of chemistry and geo-chemical evolution.

In Chart 3, on-site wells are shown in black, offsite wells to the east north-east are shown in red, offsite wells to the north and west are shown in orange, and offsite wells to the east of Foote Street and Bridport Street are shown in blue. The three deep OS wells, screened at the base of the Brighton Group, are shown as open circles. Analyses with relatively high TDS concentrations are shown with relatively large symbols. From the interpreted groundwater flow directions in Figure 6, the OS wells and the NE wells are considered to have the potential to be impacted by contamination originating on site.

The SE and NW wells shown respectively in blue and orange are considered to be outside of the local groundwater flow system from the site, due to the sewers acting as hydraulic barriers or the wells being upgradient from the site.

10.3.1 Shallow groundwater wells

Groundwater pH within shallow wells across the site and surrounds is relatively neutral, with an average field pH of 6.8 (April 2011 GME). The mean field pH of the OS, NW, NE and SE wells was 6.6, 7.3, 7.0 and 6.3 respectively in April 2011.

Mean TDS concentrations were approximately 2,000 mg/L in shallow OS wells, 2,500 mg/L in NE wells, 3,100 mg/L in NW wells, and 400 mg/L in SE wells. The individual TDS concentrations are shown in Figure 7 and Chart 1. A qualitative assessment of the relative



magnitudes of the TDS concentrations can also be made from Chart 3, in which the data points with higher TDS concentrations are shown with relatively large symbols.

Concentration contours for the April 2011 GME have been provided for NH₄⁺ (Figure 8) and SO₄²⁻ (Figure 9),

SE wells (i.e. GW9, GW10, GW11, GW12, GW13, GW14, GW15, GW16 and GW25) are characterised by low concentrations of TDS ranging from 156 to 548 mg/L and generally dominated by Na-SO $_4$ (HCO $_3$) with Mg–Cl sub-dominant. Localised proportionally elevated concentrations of nitrate (NO $_3$) and fluoride (F) 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 described in Section 7.

OS groundwater wells (i.e. GW1, GW3, GW4, GW19, GW21, GW22, GW23, GW24, GW31, GW39, GW40 and GW41) have a broad range of TDS concentrations from 662 to 4,430 mg/L . There are obvious chemical influences from site impacts, with elevated SO_4^{2-} and NH_4^+ concentrations at GW3, GW19, GW21, GW24, and GW39, shown with square symbols in Chart 3.

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

Overall, there is a broad range of water types among the OS wells from Na-Cl dominated to Ca- SO₄ 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.

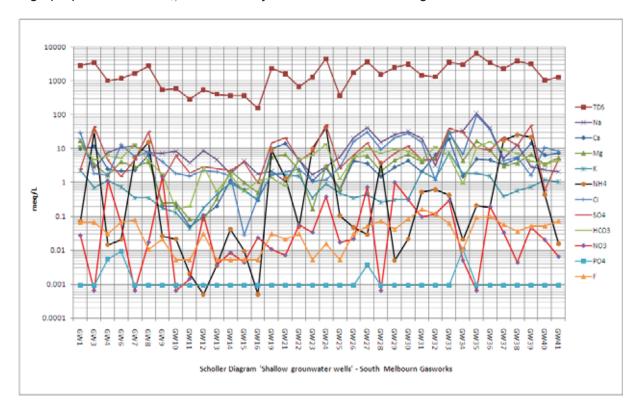


Chart 1: Schoeller Plot. Groundwater Chemistry 'Shallow groundwater wells' – April 2011 GME.



OS wells located in the vicinity of the Pickles Street sewer are generally dominated by Na-Cl with Mg-HCO₃/SO₄ being sub-dominant. Groundwater wells GW32 and GW33 located on the western side of Pickles Street have a different signature, dominated by Ca-HCO₃ and Mg-SO₄ respectively. A more significant change in the chemical signature is observed across the Foote Street/Bridport Street sewer. These changes in chemistry are consistent with the sewers being groundwater sinks that capture all of the groundwater in the Brighton group such that groundwater cannot migrate across the sewers.

NE wells (GW7, GW8, GW26, GW27, GW28, GW29, GW30, GW37 and GW38) have TDS concentrations ranging from 1,540 to 3,770 mg/L and a considerable range in the dominant ions. However, the NE wells are generally more dominated by Na than the OS wells. GW8, GW37, GW38 (and to a lesser extent GW7 and GW28), close to Richardson Street have elevated NH₄⁺ and SO₄²⁻. Although the groundwater flow direction is interpreted in Figure 6 to be approximately parallel to Richardson Street, it is possible that these wells have been impacted by contaminated groundwater migrating from on site

The gradient in the NW wells (i.e. GW32, GW33, GW34,GW36 and GW06) northwest and north of the site are relatively flat and therefore the inferred groundwater flow directions could potentially be moving in almost all directions and therefore the groundwater impacts within the wells could have been sourced from the site or off-site or could be a combination of both. However, due to the presence of the Pickles Street Sewer preventing flow across Pickles Street, the groundwater impact to monitoring wells GW33 and GW32 could be either background concentrations or be coming from an off-site source. 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).

The NW wells do not have same chemistry as the SE wells. In general, the major ions chemistry of the NW wells shows evidence of impacts but does not indicate that the Gasworks site is a source of these impacts with the exception of GW34.

10.3.2 Deeper OS groundwater wells

Groundwater within deeper OS Brighton Group wells is slightly acidic to neutral, with an average field pH of 6.6. The TDS concentration within the three deeper groundwater wells ranged from 8,860 to 23,400 mg/L, with an average TDS of 17,000 mg/L. The TDS concentrations in the deeper OS wells are all greater than the TDS concentration in any shallow well.



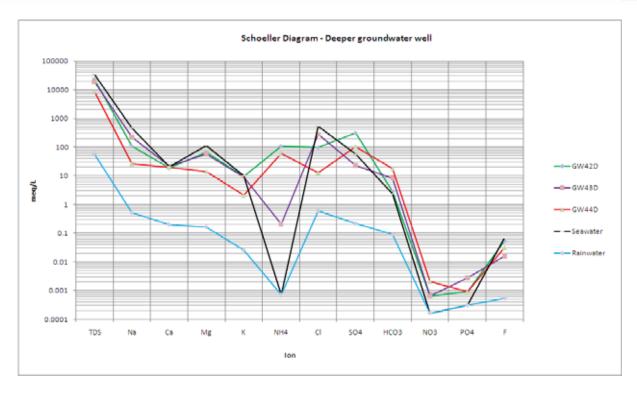


Chart 2: Schoeller Plot. Groundwater Chemistry 'Deeper groundwater wells - April 2011 GME'.

Chart 2 presents the geochemical signatures found within deeper groundwater wells and also includes the geochemical signatures of seawater and rainwater for comparison. The Piper Plot prepared for the wells sampled in April 2011 has been included as Appendix J and shows that the deeper wells are generally dominated by Na-SO₄, although GW43D is dominated by Na-Cl. NH₄⁺ concentrations are elevated in wells GW42D and GW44D, in addition to SO_4^{2-} . Elevated concentrations of NH₄⁺ and SO_4^{2-} were observed in shallow wells in the same areas. The geochemistry signature at well GW43D (Na-Cl>Mg-SO₄) is similar to that of seawater, apart from slightly elevated NH₄⁺.

The elevated concentrations of TDS in the deeper wells are considered most likely due to gasworks contamination rather than upwelling of relatively high salinity groundwater from the Older Volcanics. GW-42D and GW-44D are located towards the down-gradient ends of the local on-site groundwater flow system and in the vicinity of or down-gradient from, areas of purifiers. Gas purifiers in the north east corner of the site were above ground and those in the south east corner of the site were below ground (Environmental Earth Sciences, 2010). It is also possible that recharge over the site since gasworks operations ceased in the 1970s, and the site was first grassed in the 1980s, has displaced more heavily impacted groundwater towards the site boundaries, i.e. towards the down-gradient ends of the local groundwater flow system.

Note that it may be possible for relatively high salinity water and alkalinity to migrate laterally to some extent via preferential pathways along sewer lines that are below sea level, especially those well located within the vicinity of these sewers. However, this is not considered to be a possible reason for elevated TDS in bores installed in the natural ground at this site. This is because the hydraulic gradient would be consistently towards the sewers such that any groundwater migrating laterally along the outside of a sewer would not move away from the sewer but would ultimately be captured by the sewer.



10.4 Consideration of contaminants of concern

As indicated from previous and current groundwater investigations, groundwater at the site is contaminated with common gasworks contaminants including heavy metals (primarily, As, Co, Cu, Pb and Zn), NH₄⁺, CN, SO₄²⁻, PAHs, TPHs and MAHs.

Samples analysed for metals concentrations were collected without filtering in the field and without preservative. These samples were filtered by the laboratory before preservation with acid and subsequent analysis. Where dissolved AI is subsequently detected in samples with a pH >5.5 and <8.5, this result can be termed a potential 'false positive' as AI is only soluble in water at pH values <5.5 and >8.5. Thus, dissolved AI (and potentially other associated metals and metalloids) detected in groundwater with a pH >5.5 (e.g. GW42D and GW16) may indicate an overestimate of the dissolved metals concentrations at these locations.

10.4.1 Dissolved heavy metals

Dissolved heavy metals concentrations vary over the site and offsite which indicates both localised sources across the site (i.e. buried waste) and the potential for sources of groundwater contamination in the vicinity of the Gasworks site other than the site itself. SE (background) wells reported concentrations of As, Co and Pb (0.008 mg/L), Cu (0.007 mg/L) and Zn (0.045 mg/L) above adopted criteria. It is considered likely that these concentrations represent background conditions.

Similar concentrations of dissolved Co, Cu and Zn were also detected in the NW wells and the NE wells and most of the OS wells. Dissolved Pb concentrations were generally similar in the OS wells (and in the NW and SE wells) to the SE (background) wells. However, Co, Cu and Zn were detected at greater concentrations in some OS wells, with the greatest concentrations of 9.66, 0.051, 2.2 mg/L respectively detected in deep well GW42D. As discussed in Section 4.2 above, these results may be false positives due to the detection of dissolved AI (3.91 mg/L) at a groundwater pH of 6.3.

Concentrations of As were approximately an order of magnitude greater in the NE wells than in the SE (background) wells, and up to approximately two orders of magnitude greater than background in the NW wells. Concentrations of As in OS wells were generally above background (SE wells) but below the concentrations in the NW wells, with the exception of OS well GW19 in which the highest concentration of As was detected of all the wells, at 0.799 mg/L. Since these bores are higher than those we consider to be background concentrations, the As detected in these bores could be attributed to contamination sourced from the site.

Detectable concentrations of dissolved aluminium were identified within the following wells:

- OS GW19, GW21, GW42D and GW31;
- NE GW30;
- SE GW10, GW11 and GW16.

Suspended solids present in the samples may have contributed to the detected concentrations of Al, Pb, Cu, Pb, Zn in some wells, particularly where groundwater pH is in the range 6-9 and dissolved Al has been detected (Al is not soluble at pH greater than 5.5).

In particular, OS well GW42D reported concentrations so significantly elevated above all other samples as to be classified as outliers for aluminium (3.91 mg/L), cobalt, manganese, nickel and zinc. In addition, GW42D reported selenium at a concentration which exceeded all adopted criteria. Thus, the generally high metals concentrations in this well may be due to



the effects of sediment in the sample (very likely given a field and laboratory measured pH of 6.3) or of a high proportion of micro-colloids <0.45 µm in diameter in the sample.

For example, Hem and Lind (1974) and Hem (1992) state that metals such as Fe and Al in particular are adsorbed to organic complexes and micro-colloids of minerals such as gibbsite and kaolinite in groundwater that have a particle diameter <0.45 μ m. Hem and Lind (1974) determined that Fe "macroions or microsilicate forms approaching the composition Fe(OH)₃ may often be present in natural water", while Al "polymers continued growing until they became crystalline gibbsite [Al(OH)₃] particles a few hundredths to a few tenths of a micrometer in diameter." Thus the concentrations recorded in GW42D are likely to be a reflection of colloidal or suspended sediment concentrations, rather than dissolved.

However, the observation of relatively high concentrations of Co, Cu and Zn in some OS wells is unlikely to be due to the effects of suspended solids in unfiltered samples, as several wells showed elevated concentrations of these metals and the pH in these wells is generally relatively low.

10.4.2 Miscellaneous inorganics

There are significant impacts of ammonia (NH_4^+) on site as well as in an area off site beneath residential properties to the northeast of Richardson Street (Figure 8). Sulfate (SO_4^{2-}) concentrations are elevated in the same areas (Figure 9). This is consistent with previous groundwater monitoring undertaken in 2006 and 2007 (Golder Associates 2006a and 2007a). In the eastern corner of the site and off-site to the northeast of Richardson Street, the area of NH_4^+ and SO_4^{2-} contamination is quite extensive. The concentrations of NH_4^+ and SO_4^{2-} are generally greatest in the NE wells that are closest to the site, which is evidence that the contamination originated from on site.

Among the shallow OS wells, elevated concentrations of NH₄⁺ and SO₄²⁻ at GW3 and GW39 are likely to be due to an on-site source, and, although the interpreted groundwater flow direction beneath Richardson Street is parallel to, rather than across, the street (Figure 6), there is sufficient uncertainty in the groundwater flow direction and how this may have varied with time that elevated concentrations of the same analytes to the north east of Richardson Street may have originated from the same source.

As previously reported, potential on-site sources of NH_4^+ and SO_4^{2-} contamination are the former gas purifiers that were located in the north-eastern (above-ground) and south-eastern (below-ground) portions of the site. The gas purifiers were used for removal of sulphur from the gas and were typically filled with iron oxide or lime.

Total cyanide concentrations also show a large range on- and offsite. Total cyanide concentrations in the SE (background) wells are less than or equal to 0.014 mg/L and no free cyanide was detected in this area. In the NW wells, total cyanide concentrations were approximately an order of magnitude greater than in the SE wells. The highest concentration of total cyanide detected in the NW wells was 0.24 mg/L in well GW34, which also has a relatively high sulfate concentration (Section 10.2.1). Free cyanide concentrations were less than 0.006 mg/L in all NW wells.

In the OS wells, total cyanide concentrations were generally an order of magnitude greater than in the SE (background) wells. However, the highest concentrations of cyanide in any wells were in deep wells GW42D and GW44D, at 0.434 and 3.98 mg/L respectively. These wells also had the highest concentrations of free cyanide of any wells, at 0.013 and 0.186 mg/L, and the highest concentrations of TDS, NH_4^+ and $SO_4^{2^-}$.



In the NE wells, total cyanide concentrations were generally similar to the SE (background) wells, except in GW07, GW08, GW37 and GW38 along Richardson Road, which had concentrations between 0.014 (in GW08) and 0.39 mg/L (in GW37).

CN in the groundwater is likely to be a result of a number of sources and/or buried waste across the site. From the proportionally large amounts of complex cyanide compared to free cyanide, it could be interpreted that factors other than contamination from gasworks (such as upwelling of high salinity groundwater from greater depth) may be contributing to the elevated total cyanide concentrations. However, another possibility is that the free cyanide sourced from the gasworks has been complexed as part of natural aquifer hydrochemical processes. When cyanide is complexed it is less bio-available hence less toxic than in its free or even WAD form.

Concentrations of weak-acid dissociable (WAD) and free cyanide were either below or slightly above the laboratory LOR. Where the concentrations were greater than the LOR, they were a very small proportion of the total CN concentration, further indicating that much of the CN is complex and has very low bioavailability.

The relatively high concentrations of cyanide in the shallow NE wells which are off site but close to Richardson Road, combined with the high concentrations in deep wells GW42D and GW44D, and associated with high concentrations of NH₄⁺ as well as SO₄²⁻, suggest an onsite source or sources of the CN contamination both on site and in the off-site area near the corner of Richardson Street and Foote Street. The ferrocyanide plant at the gasworks was located on the north-eastern boundary of the site on Richardson Street (EES, 2010).

All CN, NH_4^+ and SO_4^{2-} contamination in groundwater in the eastern part of the site and off site to the east of Richardson Street is captured by the South Yarra main sewer which is aligned along Bridport Street and Foote Street. On its way to the sewer, the NH_4^+ and SO_4^{2-} plume to the east of the Richardson Street passes beneath a number of residential properties before discharging to the sewer. These properties are:

- 17, 19, 21, 23, 25, 27, 29, 31, 33 and 35 Richardson Street;
- 43, 45,49, 51, 53, 55 Greig Street; and
- 270 and 268 Bridport Street.

10.4.3 Organics

Significant elevated concentrations of organic compounds PAHs, MAHs and TPHs are found within the south-eastern corner (i.e. shallow well GW24 and deeper well GW42D) and north-eastern corner of the Site (i.e. deeper well GW44D). During the drilling of wells GW42D and GW44D, organics odours were detected. These odours noted are reflected in the elevated concentrations of naphthalene toluene and ethylbenzene in GW44D and benzene and total TPH in both wells. Elevated PAHs were also detected within the east central part of the site (wells GW3, GW4 and GW 39). The organic contamination is likely to be from a variety of onsite sources, including buried waste and historic infrastructure such as liquor wells and tar tanks.

Elevated concentrations of dissolved PAHs (primarily BaP) were also detected within wells GW40 and GW41 situated on the groundwater flow divide (Figure 6) in the northern part of the site between Gasworks Park and the Alinta Site. These wells are located in an area of very low hydraulic gradient such that the rate of groundwater movement and transportation of PAHs is interpreted to be limited in this area. There is no identifiable source of these PAHs within this area, with the exception of buried waste. Elevated concentrations of PAHs were not detected in monitoring wells GW1, GW 31 or GW21 located to the west, south west and



south east of GW40 and GW41. Based on the low hydraulic gradient, the likely source of PAH impacts (which is limited in its capacity to impact groundwater) and the insolubility of PAHs, it is considered unlikely that contaminated groundwater at Gasworks Park would migrate to the north west beneath the Alinta Site and pose a risk to off-site users.

PAHs were detected in wells GW7, GW8, GW37 and GW38, which are located along the north side of Richardson Road in the NE group of wells (Table 17). PAHs were not detected in any other offsite NE, NW, or SE wells.

10.5 Beneficial uses of groundwater

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 April 2011 GME. 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 A_2), 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, abstraction 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. The abstraction of groundwater at both of these sites is currently being controlled by an Interim Site Contamination Management Plan.

10.5.1 Maintenance of ecosystems

The following water quality indicators exceeded ecological based criteria:

- CN;
- NH₄⁺;
- heavy metals: As, Co, Cu, Pb, Ni, Se and Zn;
- PAHs, specifically naphthalene, phenanthrene, anthracene, fluoroanthene and BaP;
- benzene, toluene and ethyl benzene; and
- TPH (C₆-C₉ and C₁₀-C₃₈).



The protection and maintenance of ecosystems was a potential beneficial use of all groundwater in the Brighton Group sediments beneath the site prior the construction of the sewers. 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 groundwater from Gasworks Park Precinct discharges to the Melbourne Water Sewer System (Section 4.2.1 and Section 10.1), the groundwater from the site does not support any ecosystem and this beneficial use does not require consideration. Therefore, this beneficial use is considered to be precluded, however, although not relevant at this time may require protection in the future should hydrogeological conditions change.

10.5.2 Potable water supply (acceptable)

All values presented in red for inorganic and organic chemicals in Tables 11-18 indicate concentrations in excess of the NHMRC (2004/2011) *Australian Drinking Water Guidelines*. These include:

- pH (aesthetics only);
- TDS (aesthetics only);
- SO₄²-;
- Cl (aesthetics only);
- CN;
- fluoride;
- nitrate;
- heavy metals: Al, As, Bo, Cd, Mn, Ni and Se; and
- BaP, styrene, benzene, xylenes and TPH (C₆-C₉ and C₁₀-C₃₈).

As the Albert Park area and the Brighton Group aquifer are not sources of potable water supply and the abstraction of groundwater is being prevented by an ICMP, this beneficial use does not require further consideration. Therefore, this beneficial use is considered to be precluded but not relevant and does not require protection in the future.

10.5.3 Potable mineral water supply

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 monitoring wells. Therefore, the quality of much of the non-impacted groundwater in the vicinity of the site would not support this beneficial use.

As the Albert Park area and the Brighton Group aquifer are not sources of mineral water supply and the abstraction of groundwater on site is being prevented by an Interim Site Contamination Management Plan, this beneficial use does not require consideration. Therefore, this beneficial use is not relevant and does not require protection in the future.

10.5.4 Water supply: Irrigation

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 monitoring wells and is above 3,500 mg/L in several of the wells.

The likelihood of abstraction 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, in the residential area to the north east of the site, despite the low likelihood of the use of the groundwater for irrigation purposes, this potential beneficial use cannot be completely discounted in this area.

10.5.5 Water supply: domestic and stock use

The search of the groundwater database (Section 5.2.3) 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 five onsite, and nine off site wells (Section 9.2). Concentrations of certain metals, major ions and boron 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, the low yield and controls over groundwater extraction, it s considered highly unlikely that groundwater will be extracted for this use.

However, in the residential area to the north east of the site, despite the low likelihood of use of the groundwater for stock/domestic purposes, this potential beneficial use cannot be discounted in this area.

10.5.6 Industrial 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.

The Brighton Group aquifer is not a current source of industrial water supply, and this aquifer is unlikely to be used for this purpose in the near future. The yield of the aquifer is unlikely to be sufficient for such purposes as industrial processes usually require reasonably large volumes of water. 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.

Based on this data, industrial water use is considered to be a precluded beneficial use. However, as the site setting is not industrial use and since well yield is low, industrial water use is considered to be a very unlikely use. Therefore, although this beneficial use is likely to be precluded, it is not relevant on- or offsite and does not require protection in the future.

10.5.7 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 all 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 Figure 12). 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 NH₄⁺ and SO₄²⁻ 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 other sources than local groundwater.

Considering the availability of reticulated mains water and the low yield of the Brighton Group, it is unlikely that an abstraction well would be drilled for the purpose of filling a swimming pool, however, is still a possibility and must be assessed.

As indicated in NHMRC 2008 (Table 9.3 on page 155), consumption of water during recreational events (i.e. in creeks or swimming pools using groundwater) has been considered, with criteria being set at 20 times the health criteria based on the assumption that recreational swimmers consume 100 mL of water per session, while NHMRC (2004/2011) drinking criteria assumes 2 L/day potable water consumption (also reported in ANZECC 1992, p3-7).

The closest groundwater well to 266 Bridport Street, Port Melbourne is GW30, which is therefore most representative of groundwater that potentially may be extracted to fill the swimming pool at this property. All ions, including sulfate and ammonia, heavy metals and organic CoPC are below primary contact recreation criteria and therefore do not preclude this beneficial use at this location.

Elevated concentrations of As in some wells (onsite, offsite and background) are likely to be associated with naturally occurring As within the Brighton Group sediments. Also, elevated concentrations of AI, identified at groundwater wells GW19, GW21 and GW31 and As and Ni concentrations in well GW42D are likely to reflect the presence of suspended solids in the samples rather than to be representative of dissolved concentrations.

Concentrations of CN, NH_4^+ , BaP, styrene, benzene, xylenes and TPH fraction C_6 - C_9 and fraction C_{10} - C_{36} within some wells represent a potential risk for groundwater extraction (i.e. filling a swimming pool). However those wells closest to the two at risk swimming pools indicate groundwater in the immediate vicinity of the pools does not preclude this beneficial use as they are located up-gradient or to the side of impacted groundwater plume areas.

As the groundwater is effectively captured by the surrounding sewer system and transported elsewhere, there is minimal risk of groundwater and CoPC discharging into Port Phillip Bay. This eliminates the exposure risk of for recreational users of Port Phillip Bay.

Notwithstanding the low likelihood of use of the groundwater for primary contact recreation in the residential area to the north east of the site, this potential beneficial use cannot be discounted in this area.



10.5.8 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 (Table 9) and groundwater levels are permanently 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.

Based on the average Ryzner Index (RI) value >1 (average 18.16) and Langelier Saturation Index (LSI) value <-3 (average -5.7), relatively neutral pH (average 6.80), and average sulfate concentration of 1,075.8 mg/L, groundwater beneath the site is considered to be slightly corrosive. This information should be considered and it is recommended that the structural/design engineer for any future development proposed at the site should make an independent assessment of the sub-surface conditions in order to develop an appropriate specification for the materials for sub-surface structures including footings and foundations.

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

10.6 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 does not comply with trade waste requirements 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', presented in Appendix G.

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

- pH in two OS wells (GW19 and GW21) and two SE wells (GW10 and GW11);
- SO₄²⁻ in all OS wells with exception to GW40, all NW wells with exception to GW6, all NE wells and all SE wells with exception to GW9, GW11 and GW16;
- NH₄⁺ in six OS wells (GW3, GW23, GW24, GW39, GW42D and GW44D) and three NE wells (GW8, GW37 and GW38);
- Mn in three OS wells (GW19, GW42D and GW44D);
- Fe in one OS well (GW19);
- benzene and TPH fraction C₆-C₉ in two OS wells (GW24 and GW44D); and
- xylenes in one OS well (GW24).

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



11 CONCLUSIONS AND RECOMMENDATIONS

As part of the former South Melbourne Gasworks 53V audit (undertaken by Dr. Peter Nadebaum of GHD), Environmental Earth Sciences VIC has undertaken (on behalf of CoPP) a further groundwater investigation. The objectives of this groundwater investigation were to advance understanding of hydrogeological and hydro-geochemical data related to the site and investigate potential sources for all CoPC detected in the groundwater.

11.1 Groundwater flow system

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 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);
- 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 downgradient 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
- the average linear velocity of the groundwater flowing laterally through the Brighton Group over most of the site is estimated to be approximately 5 m/yr.



Based on the interpreted aquifer properties and hydraulic gradients, the total flux of groundwater from the site to the surrounding sewers from Gasworks Park and Southport Community Nursing Home is estimated to be approximately 11 m³/day, (4 ML/yr). From this estimate of the discharge rate, the average recharge rate across the site was estimated to be approximately 0.1 m/yr.

Within the Brighton Group, there are slight upward hydraulic gradients at some locations and downward gradients at other locations. These could be caused by different rates of recharge at the water table in both location and time (due to short-term variations in climate). Localised vertical gradients could also be due to heterogeneities within the Brighton Group.

11.2 Groundwater contamination

Groundwater at the site is impacted with common gasworks contaminants, including heavy metals (primarily, As, Co, Cu, Pb and Zn), NH₄⁺, CN, SO₄, PAHs, TPHs and MAHs. However, there is no evidence of either DNAPL or LNAPL existing onsite.

The distribution of the groundwater contamination is consistent with the former gasworks infrastructure and the physical groundwater flow system described above, in which it would be expected that the full saturated thickness of the Brighton Group would have been impacted, particularly in the vicinity of the sewers. The greatest concentrations of TDS, $SO_4^{2^-}$, NH_4^+ , CN and many organics in 2011 were detected in monitoring wells screened at the base of the Brighton Group near the perimeter of the site in the vicinity of former gas purifiers towards the downgradient end of the flow system. This contamination is interpreted to have originated on site. The groundwater in the Brighton Group is not interpreted to have been significantly impacted by the upwelling of higher salinity groundwater via the underlying Older Volcanics in comparison to the impacts from the Gasworks site.

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.

As all the groundwater migrating from the site is captured by the sewers, all the contaminants dissolved in the groundwater are also captured by the sewers. Due to the proximity of the sewers to the site boundaries, for the most part, the contaminated groundwater from the site migrates directly to the sewers without passing beneath neighbouring properties. However, there is an area to the northeast of Richardson Street where there is a plume of the NH_4^+ and SO_4^{2-} contamination that migrates beneath up to 18 properties en route to the South Yarra Sewer Main beneath Bridport Street. Relatively high concentrations of CN have also been detected in groundwater samples from this area. Therefore, although the current groundwater flow direction is interpreted to be not across, but parallel, to Richardson Street, the Gasworks site is considered likely to be the original source of this area of groundwater contamination.

Elevated concentrations of PAHs (primarily BaP) were detected within newly installed groundwater wells in an area of very low hydraulic gradient in the northern part of the site, close to the Alinta Site. There is no identifiable source of these PAHs within this area, with the exception of buried waste. Based on the low hydraulic gradient, the likely source of PAH impacts (which is limited in its capacity to impact groundwater) and the insolubility of PAHs, it is considered unlikely that contaminated groundwater at Gasworks Park would migrate to the north west beneath the Alinta Site and pose a risk to off-site users.



11.3 Potential beneficial uses

Based on the TDS values considered to be background in the general area of the SMG, the groundwater has been classified as 'Segment A_2 ', with a TDS range of 501-1,000 mg/L. The wells considered to be representative of background conditions (i.e. represented by the south east [SE] wells) in the vicinity of the site confirm this classification based on TDS. However, it should be noted that there are wells with TDS greater than 3,500 mg/L to the north and west of the site that are considered to be outside of the potential impact area of the site, due to sewers acting as hydraulic barriers or the wells being up-gradient from the site. Therefore, the quality of some of the non-impacted groundwater in the vicinity of the site does not support some of the protected beneficial uses.

The Department of Sustainability and Environment (DSE) 'Groundwater Database' indicates that the primary purpose of groundwater wells installed within the watertable aquifer in the vicinity of the site is for investigative purposes. However, this database indicates that some of the wells were installed for stock/domestic (12%) and irrigation (3%) purposes. None of the listed wells were installed for water supply or mineral water purposes and the Brighton Group in general, is not known to be used for these purposes. In this urban environment with a municipal reticulated water supply, the potential beneficial uses of potable water and mineral water supply are not considered to be realistic potential beneficial uses. Recent monitoring confirms that all groundwater from the site ultimately flows to the surrounding sewer system (Section 11.1). Therefore, 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.

The remaining potential groundwater beneficial uses to be considered are:

- agriculture, parks and gardens (irrigation);
- stock watering;
- industrial water use:
- primary contact recreation; and
- buildings and structures.

As the site is owned by the City and the State of Victoria, the abstraction of groundwater onsite for any purpose can be prevented. The abstraction of groundwater is currently being controlled by an ICMP, because of the groundwater impacts beneath the site. Therefore, on site, the above potential beneficial uses, with the exception of buildings and structures, are considered to be precluded.

However, in the area of gasworks-related groundwater contamination beneath private residences to the northeast of Richardson Street and northwest of Bridport Street, the abstraction of groundwater is not currently prevented. In this area, the saturated thickness of the Brighton Group is limited to less than 10 m by the drawdown caused by the South Yarra Sewer Main. This, combined with its relatively low hydraulic conductivity, means that the potential yield of water wells in the Brighton Group in this area would be no more than a few litres/minute. This physically limits the usefulness of the resource. However, notwithstanding this limitation, the potential beneficial uses of primary contact recreation, irrigation and stock/domestic cannot be discounted in this area.



11.4 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 August 2011 GME 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.

11.5 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 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, it is currently feasible for groundwater extraction to take place.

GQRUZs are areas of aquifers identified by EPA Victoria where one or more beneficial uses are precluded by pollution. Implementation of a GQRUZ would significantly reduce the risks associated with groundwater extraction in this area.

As Gasworks Park and Southport are owned by the City and the State of Victoria, the abstraction 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. The abstraction of groundwater at both of these sites is currently being controlled by an ICMP.



11.6 Recommendations

We understand that CoPPs obligations under the 'Deed of Agreement' include the following:

- prepare a Monitoring Plan and submit it to Melbourne Water and South East Water for approval;
- continue to monitor groundwater contamination at, and in the vicinity of, the South Yana Main, Hobsons Bay Main and Pickles Street Branch Sewers in 'accordance with the Monitoring Plan;
- supply data relating to groundwater recorded or obtained in the course of implementing the Monitoring Plan to Melbourne Water and South East Water;
- notify Melbourne Water and South East Water of any groundwater changes in accordance with the Monitoring Plan; and
- have and implement a contingency plan to manage the contamination risks posed by groundwater to meet EPA requirements should Melbourne Water or South East Water undertake work to its sewer which increases risks associated with groundwater contamination from the site to an unacceptable level.

Groundwater from the site has not been sampled and analysed since April 2011. It is possible that, in some parts of the site, contaminant concentrations in groundwater are reducing with time as the site has not operated as a gasworks since the early 1970s. Therefore, we recommend a GME takes place during the next several weeks to months. We do not consider it necessary to sample all the wells. The sampling plan should prioritise select OS and NE wells. We also recommend a rationalisation of the suite of analytes to further optimise the cost effectiveness of the GME.

We recommend that the mass flux of contaminants discharging to the sewers is revisited and the associated lack of unacceptable risk to the sewer system and the treatment plant is confirmed.

We recommend a review of possible management/remediation strategies for the area of groundwater contamination to the north east of the site. This review would include consideration of the potential cost, benefit, duration, practicality, environmental footprint and risks of approaches to remediation in this area, in comparison to the current situation in which all this groundwater is captured by the sewer system.

We also recommend that a GQRUZ be considered that would cover the area of interpreted gasworks-related groundwater contamination to the north east of the site. This would cover an area of approximately 20-30 private properties.

12 REFERENCES

Australian and New Zealand Environment and Conservation Council (ANZECC) and ARMCANZ, 2000. Australian and New Zealand guidelines for fresh and marine water quality;

ANZECC, 1992a. Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites;

ANZECC, 1992b. Water quality guidelines for fresh and marine waters;



- Barlow, Paul M, 2003, *Groundwater in Freshwater-Saltwater Environments of the Atlantic Coast, U.S. Geological Survey Circular.* 1262.
- Biodiversity Committee, 2003. *Minimum construction requirements for water bores in Australia*;
- Dahlhaus, P., et al, 2004. Port Phillip and Westernport Groundwater Flow Systems. Port Phillip and Westernport Catchment Management Authority.
- Environment Protection and Biodiversity and Conservation Act (1999) including Policy Statement 1.2 and the Bilateral Agreement between the Commonwealth and the State of Victoria, regarding environmental assessment, made on June 2009 under Section 45 of EPBC Act;
- EPA Victoria, 2006. *Hydrogeological assessment (groundwater quality) guidelines,* Publication 668:
- EPA Victoria, 2009. Sampling and analysis of waters, wastewaters, soils and wastes, Industrial Waste Resource Guidelines (IWRG701);
- Environmental Earth Sciences Pty Ltd, 2009, Quality Assurance and Environmental Management Manual;
- Environmental Earth Sciences Pty Ltd, 2009. Soil, gas and groundwater sampling manual. Work Instruction 01;
- Environmental Earth Sciences Pty Ltd, 2008. Logging manual. Work Instruction 01;
- Environmental Earth Sciences VIC, 2010. Sampling and Analysis Plan, South Melbourne Gasworks, Albert Park, Victoria';
- Geological Survey of Victoria (GSV), 1974. *Melbourne 1:63 360 Geological Series Map* Part 7822, Zone 55, Sheet SJ 55-1;
- GHD 31/26548/189319Letter 'Gasworks Site Environmental Audit Sampling and Analysis Plan,' dated 10 November 2010;
- GHD, 2008. Section 53V Environmental Audit Interim Report, Gasworks Site, Albert Park Report number 31/21452/146576;
- Golder Associates, 2004a. *Site History Review, Gasworks Park, Albert Park, Victoria*. Report number 04613504/003;
- Golder Associates, 2004b. Further Recommendations for Action, Gasworks Park, Albert Park. Letter report number 04613504\504W006L;
- Golder Associates, 2004c. Report number 04613504/010 Vapour and Edible Vegetation Risk Assessment, Gasworks Park, Albert Park.
- Golder Associates, 2004d. Report number 04613504/025- *Interim Contamination Management Plan for Current Site Use, Gasworks Park, Albert Park.*
- Golder Associates, 2004e. Interim Contamination Management Plan for Current Site Use, Southport Community Nursing Home, Albert Park. Report number 04613504/026;
- Golder Associates, 2006a. *Hydrogeological Conceptual Model, Gasworks Park Precinct, Albert Park.* Report number 05613732/018;
- Golder Associates, 2006b. Assessment of Groundwater Risks, Gasworks Park Precinct, Albert Park. Report number 05613732/018;
- Golder Associates, 2006c. *Installation and Sampling of Additional Groundwater Monitoring Wells, Gasworks Park Precinct, Albert Park.* Report number 05613732/02;



- Golder Associates, 2006d. Review of Contamination Status, Southport Community Residential Home, Albert Park. Report number 05613732/022;
- Golder Associates, 2006e. Further Groundwater Investigation, North East of the Former South Melbourne Gasworks, Gasworks Park Precinct, Albert Park. Report number 05613732/039:
- Golder Associates, 2007. Further Groundwater Investigation, Pickles Street Sewer, West of the Former South Melbourne Gasworks, Gasworks Park Precinct, Albert Park. Report number 05613732/059.
- Hem J D and Lind (1974), Kaolinite synthesis at 25°C. Science 184:1171-1173.
- Hem J D (1992), Study and interpretation of the chemical characteristics of natural water. Third Edition. US Geological Survey Water-Supply Paper 2254.
- Leonard, J, 1992. Port *Phillip Region Groundwater Systems Future Use and Management*. Department of Water Resources.
- National Environment Protection Council (NEPC), 1999. *National environment protection* (assessment of site contamination) measure. National Environment Protection Council, Adelaide, SA;
- National Health and Medical Research Council (NHMRC)/ Natural Resource Management Ministerial Council (NRMMC) (2011). *Australian drinking water guidelines*. National Water Quality Management Strategy.
- NHMRC/ NRMMC (2008). *Guidelines for managing risks in recreational water.* Australian Government, February 2008.
- Soil Conservation Authority, 2001. Flora of Melbourne. Chapter 2 Soils of Melbourne;
- South East Water. 2004, Standards for trade waste discharge to the sewerage system;
- Standards Australia (AS 4482.1), 2005. Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds. Standards Australia, Homebush, NSW;
- Standards Australia (AS 4482.2), 1999. Guide to the sampling and investigation of potentially contaminated soil, Part 2: Volatile substances. Standards Australia, Homebush, NSW;
- Standards Australia (AS/NZS 4801:2001), 2001. Occupational health and safety management systems Specification with guidance for use;
- Van de Graaff, R. and Wootton, C, 1996. *Landcare Notes Melbourne Soils*. Department of Sustainability and Environment;
- Victorian Government Gazette, 2002. State Environment Protection Policy (SEPP),
 Prevention and Management of Contamination of Land. No. S95, Gazette 4/6/2002;
- Victorian Government Gazette, 2002. *SEPP, Groundwaters of Victoria*. No. G12, Gazette 21/3/2002; and
- Victorian Government Gazette, 2004. SEPP, Waters of Victoria (as varied by Schedule F6 (Waters of the Port Phillip Bay)). No. S101, Gazette 27/8/1997.



13 GLOSSARY OF TERMS

Anisotropy condition in which one or more properties vary according to direction.

Aquifer rock or sediment in a formation, group of formations, or part of a formation which is saturated and sufficiently permeable to transmit economic quantities of water to wells and springs.

Aquifer, **confined** aquifer that is overlain by a confining bed with significantly lower hydraulic conductivity than the aquifer.

Aquifer, perched region in the unsaturated zone where the soil is locally saturated because it overlies soil or rock of low permeability.

Aquitard a unit of low-permeability that can store groundwater and also transmit it slowly.

Borehole an uncased drill hole.

Bore. A hydraulic structure that facilitates the monitoring of groundwater level, collection of groundwater samples, or the extraction (or injection) of groundwater. Also known as a Well.

Confined Aquifer. An aquifer that is confined between two low-permeability aquitards. The groundwater in these aquifers is usually under hydraulic pressure, i.e. its hydraulic head is above the top of the aquifer.

Confining layer. A layer with low vertical hydraulic conductivity that is stratigraphically adjacent to one or more aquifers. A confining layer is an aquitard. It may lie above or below the aquifer.

Drawdown. Lowering of hydraulic head.

Electrical Conductivity (EC). The EC of water is a measure of its ability to conduct an electric current. This property is related to the ionic content of the sample, which is in turn a function of the total dissolved (ionisable) solids (TDS) concentration. An estimate of TDS in fresh water can be obtained by multiplying EC by 0.65.

Effective Transmissivity. The transmissivity of a bounded aquifer, incorporating the effect of the no-flow boundaries. The effective transmissivity is less than the actual transmissivity in an aquifer of limited extent.

Ephemeral stream a stream that flows only during periods of precipitation and briefly thereafter, or during periods of elevated water-table levels when the stream is in direct hydraulic connection with the underlying unconfined aguifer (i.e. receives base-flow).

Fracture break in the geological formation, e.g. a shear or a fault.

Gradient rate of inclination of a slope. The degree of deviation from the horizontal; also refers to pressure.

Groundwater. The water held in the pores in the ground below the water table.



Hydraulic Head. The sum of the elevation head and the pressure head at a point in an aquifer. This is typically reported as an elevation above a fixed datum, such as sea level. **Hydraulic conductivity.** A coefficient describing the rate at which water can move through a permeable medium. It has units of length per time.

Permeability. Property of porous medium relating to its ability to transmit or conduct liquid (usually water) under the influence of a driving force. Where water is the fluid, this is effectively the hydraulic conductivity.

Piezometer a cased borehole with a short slotted screen for measuring standing water level (SWL), which represents a potentiometric surface or elevation of the water table; also used to obtain sample of groundwater for quality assessment.

Piezometric or Potentiometric Surface. A surface that represents the level to which water will rise in cased bores. The water table is the potentiometric surface in an unconfined aquifer.

Purge (wells) pumping out well water to remove drilling debris or impurities; also conducted to bring fresh groundwater into the casing for sample collection. The later ensures that a more representative sample of an aquifer is taken.

Recharge Area location of the replenishment of an aquifer by a natural process such as addition of water at the ground surface, or by an artificial system such as addition through a well

Recovery rate at which a water level in a well rises after pumping ceases.

Saturated Zone zone in which the rock or soil pores are filled (saturated) with water.

Specific yield volume of water released from storage by an unconfined aquifer per unit surface area (of porous medium) per unit decline in the water table. Specific yield is unitless and typically has a value in the range 0.005 to 0.30.

Storativity volume of water released from storage by a confined aquifer per unit surface area (of porous medium) per unit decline in hydraulic head. Storativity is unitless and typically has a value in the range 1E-4 to 0.005.

Stratigraphy vertical sequence of geological units.

Suspended Solids (SS) matter which is suspended in water which will not pass through a 0.45 µm filter membrane.

Total Dissolved Solids or Total Dissolved Salts (TDS) total dissolved salts comprise dissociated compounds and undissociated compounds, but not suspended material, colloids or dissolved gases.

Transmissivity rate at which water is transmitted through a unit width aquifer under a unit hydraulic gradient.

Unconfined aquifer. An aquifer in which the water table forms the upper boundary.

Unsaturated zone. The zone between the land surface and the water table, in which the rock or soil pores contain both air and water.



Water table interface between the saturated zone and unsaturated zones. The surface in an aquifer at which pore water pressure is equal to atmospheric pressure.

Well. A hydraulic structure that facilitates the monitoring of groundwater level, collection of groundwater samples, or the extraction (or injection) of groundwater. Also known as a Bore.



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 onsite. 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.

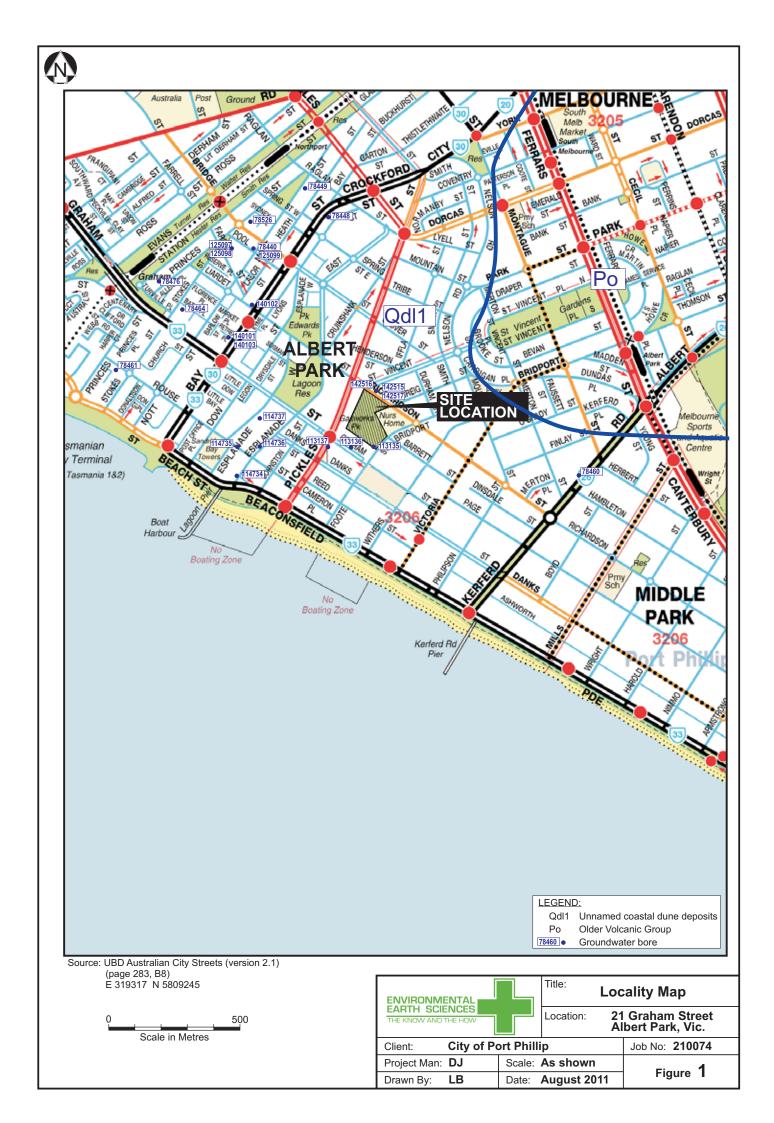
Limit of liability

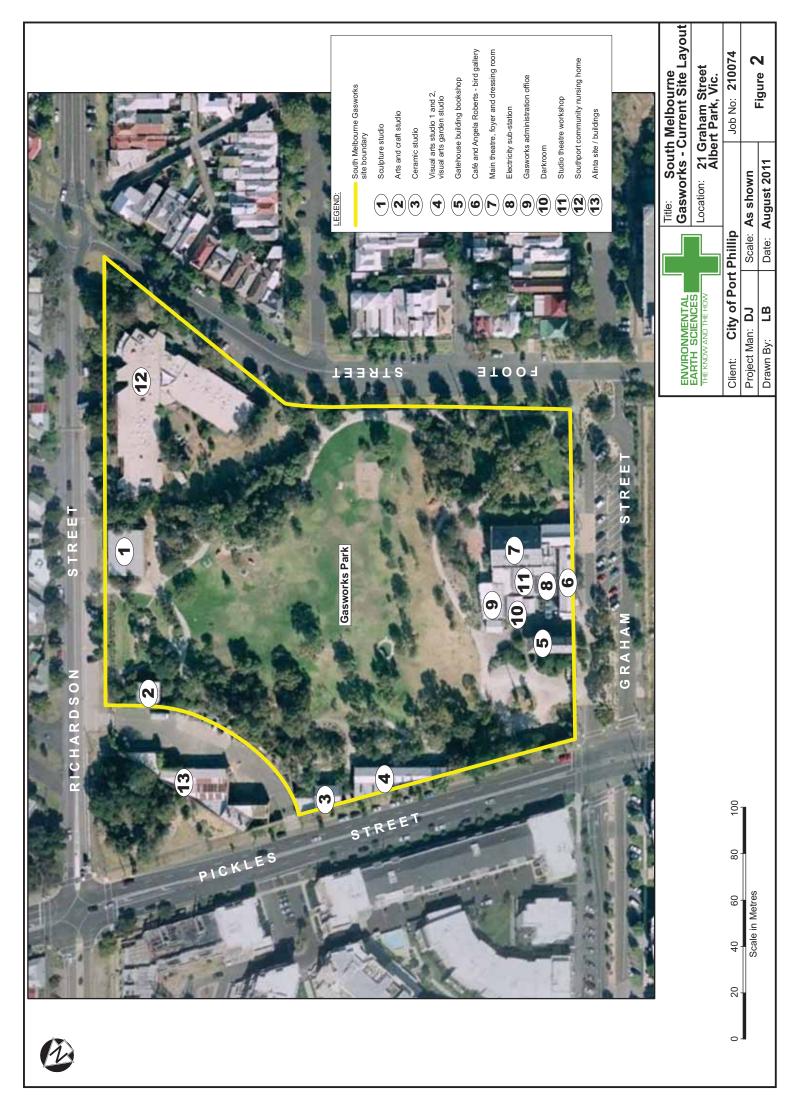
This study has been carried out to a particular scope of works at a specified site and should not be used for any other purpose. This report is provided on the condition that Environmental Earth Sciences VIC disclaims all liability to any person or entity other than the client in respect of anything 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 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.

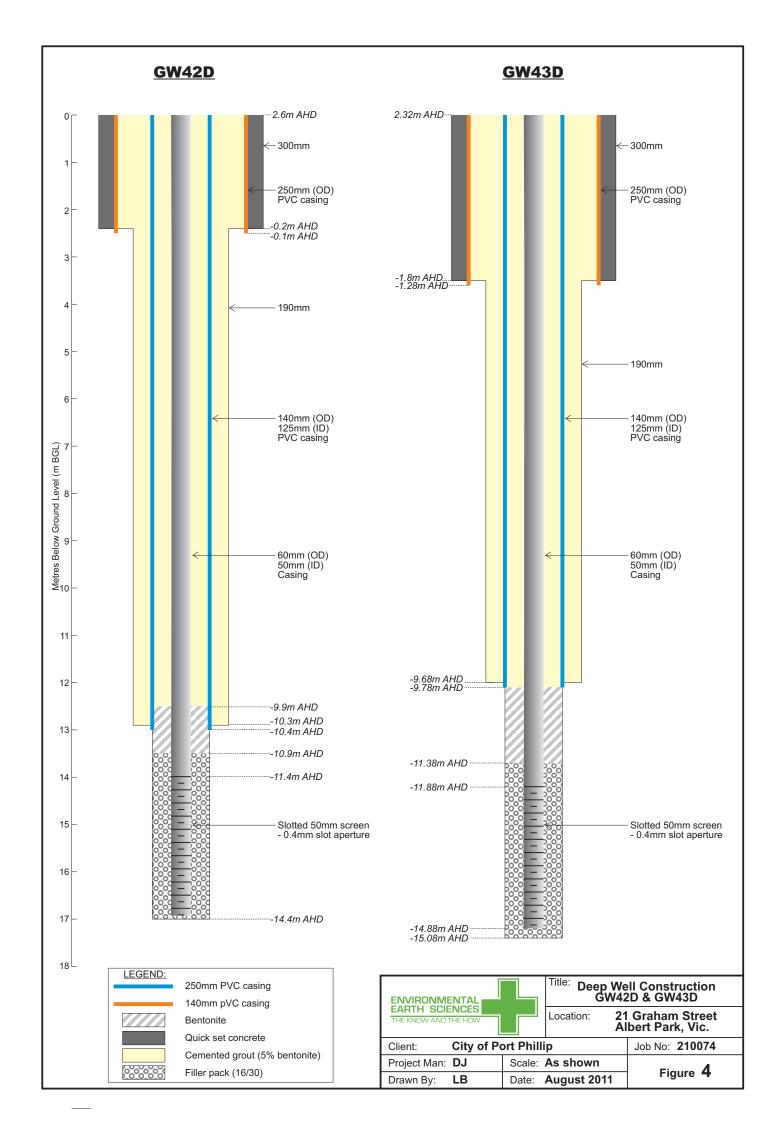


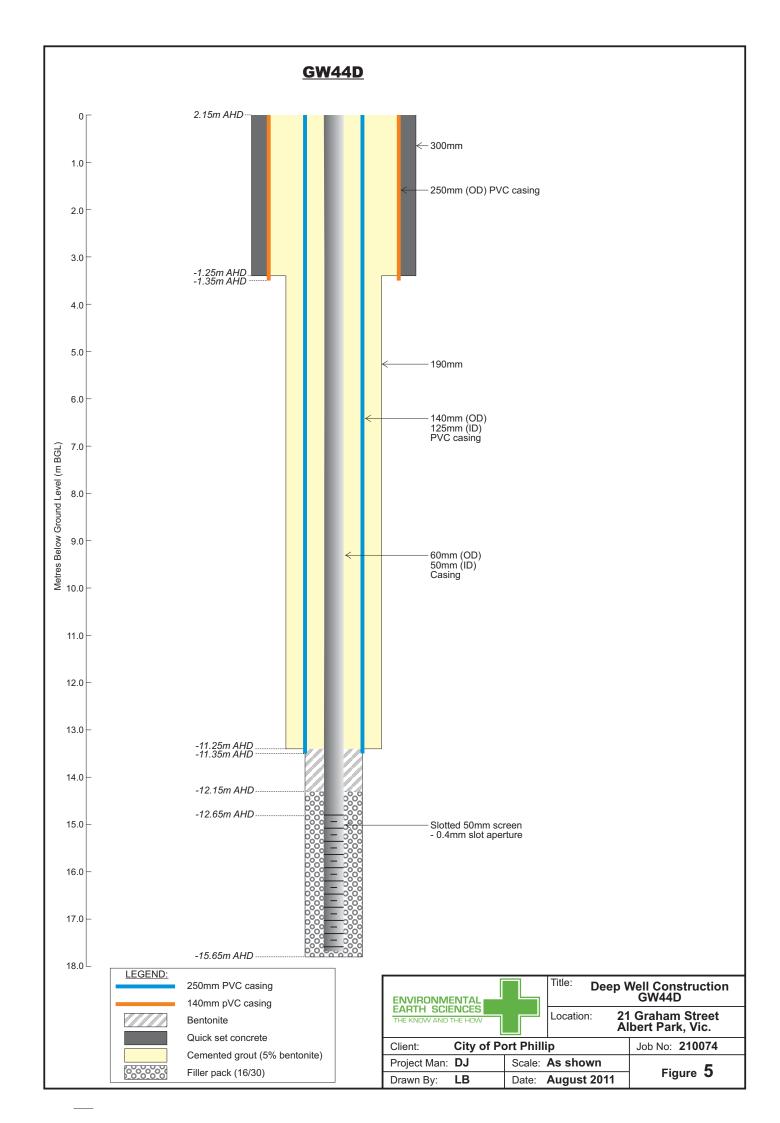
FIGURES

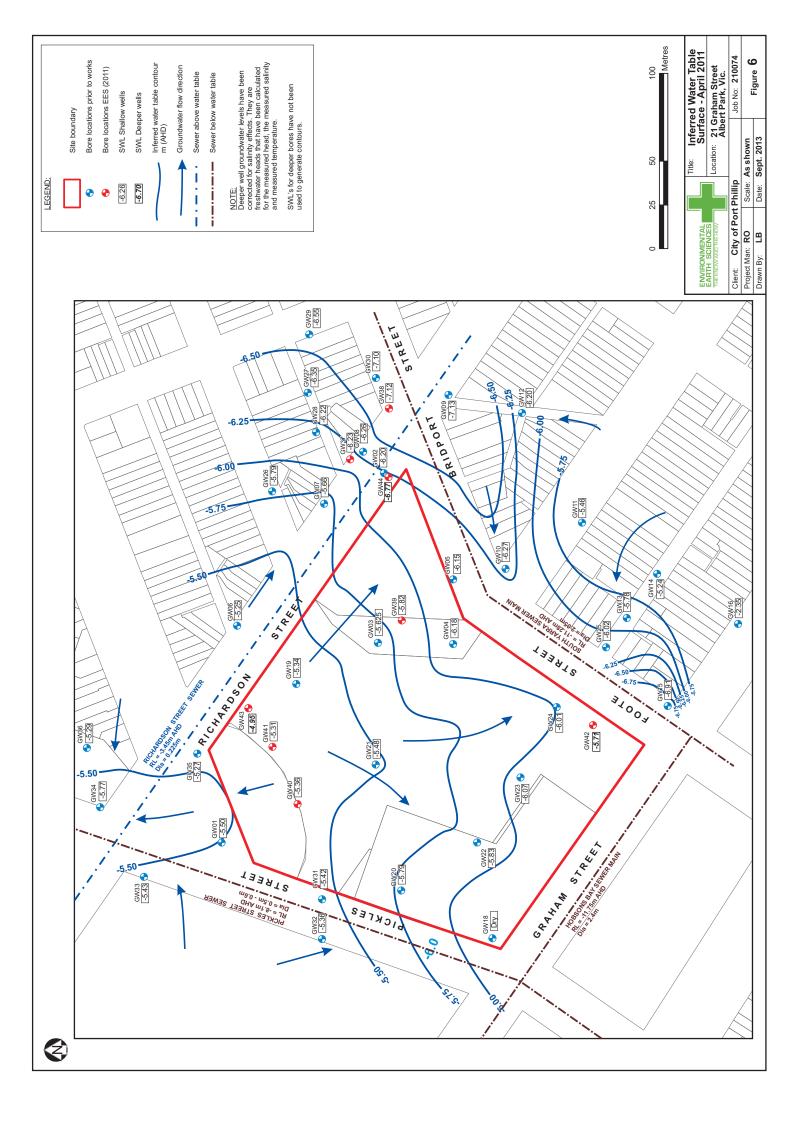


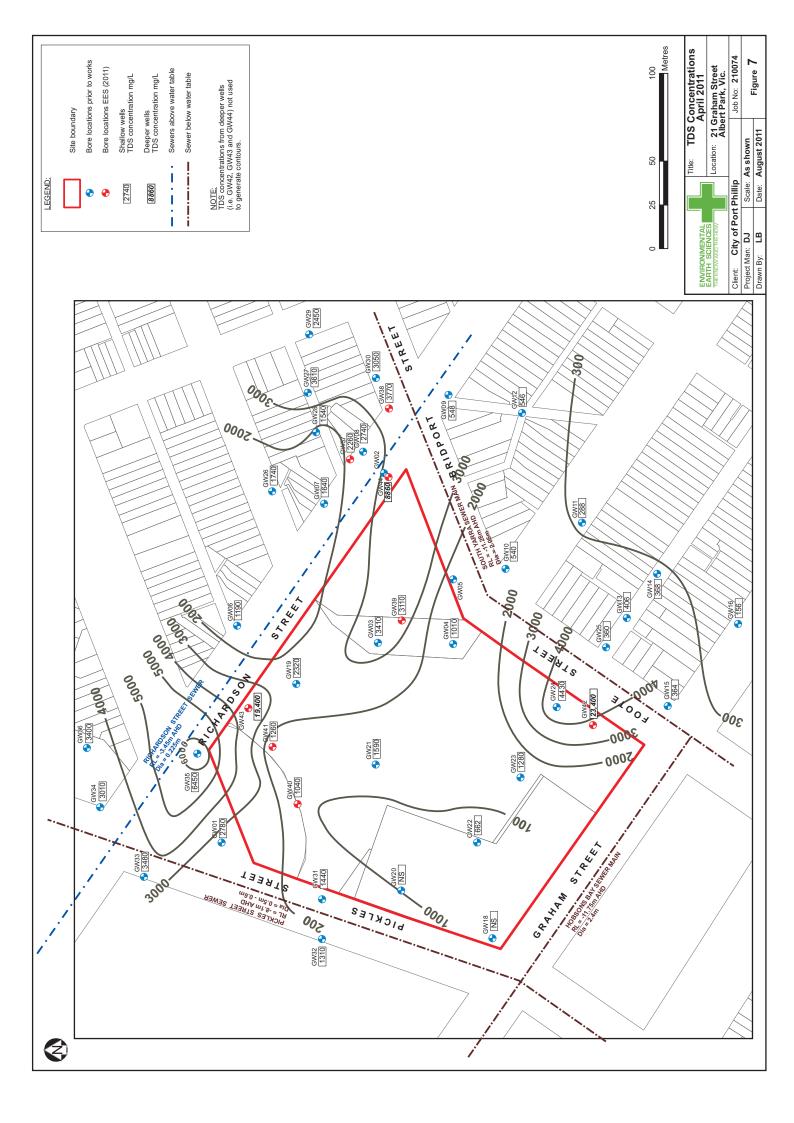


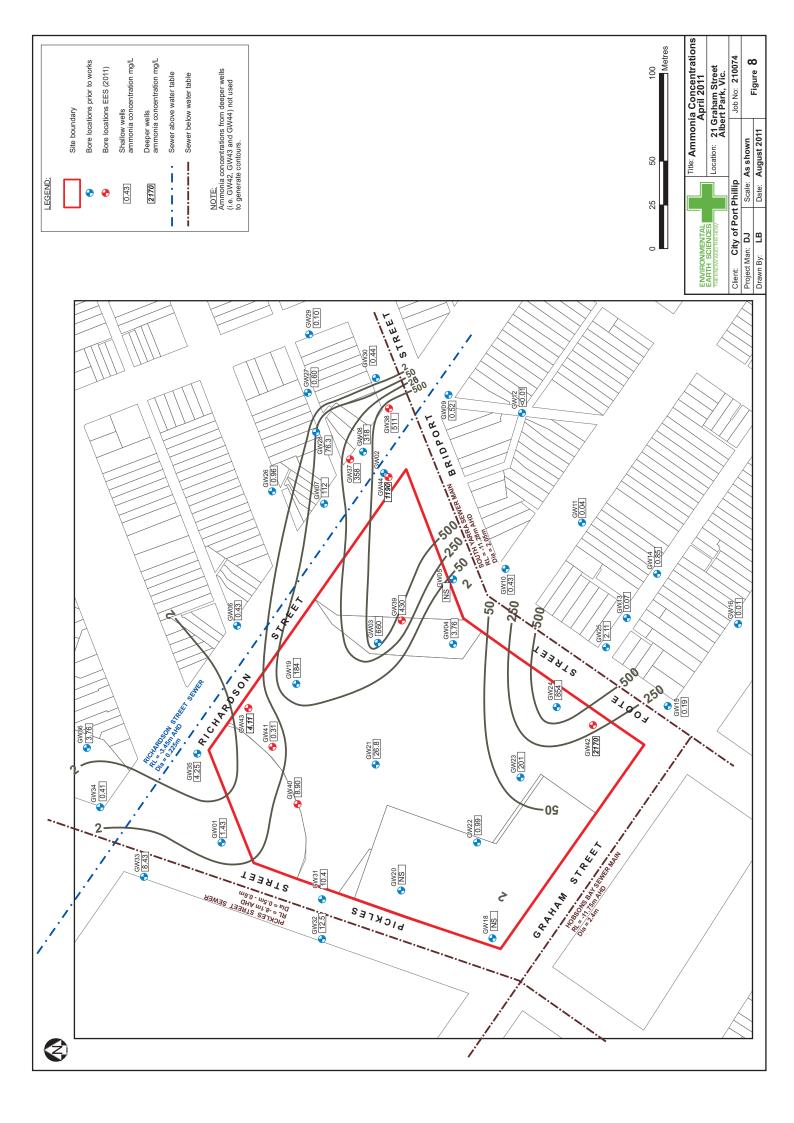


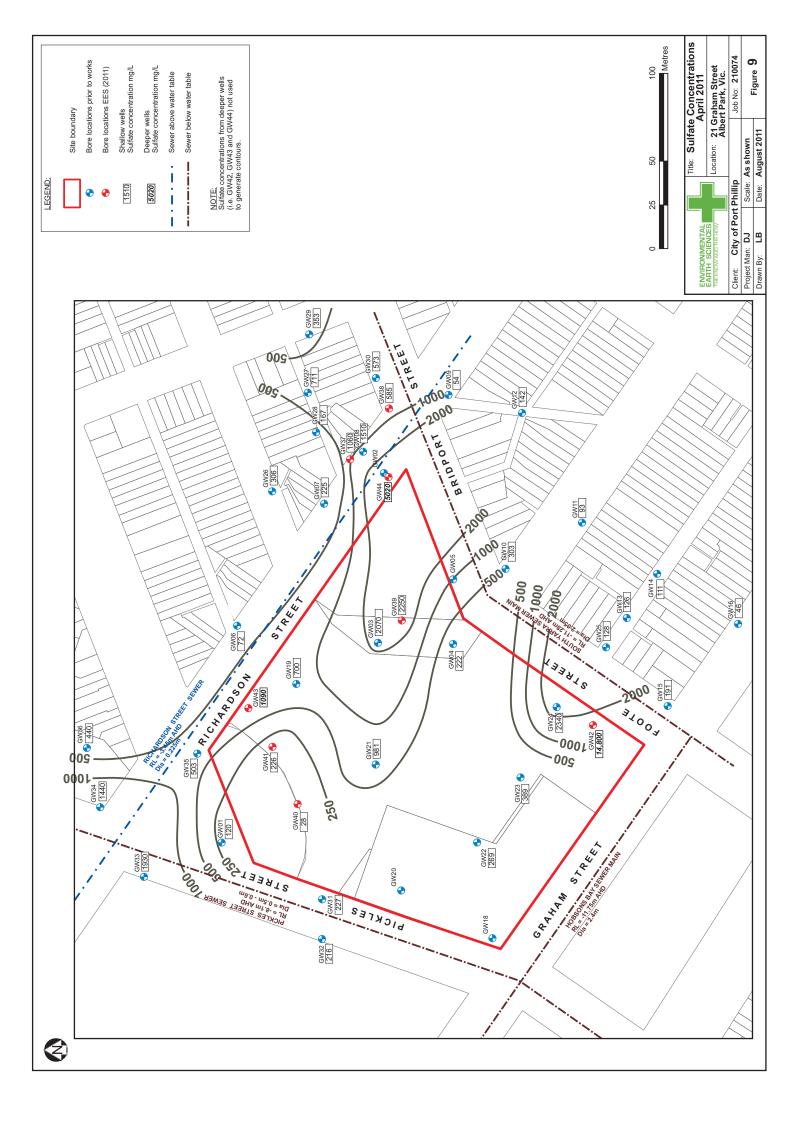


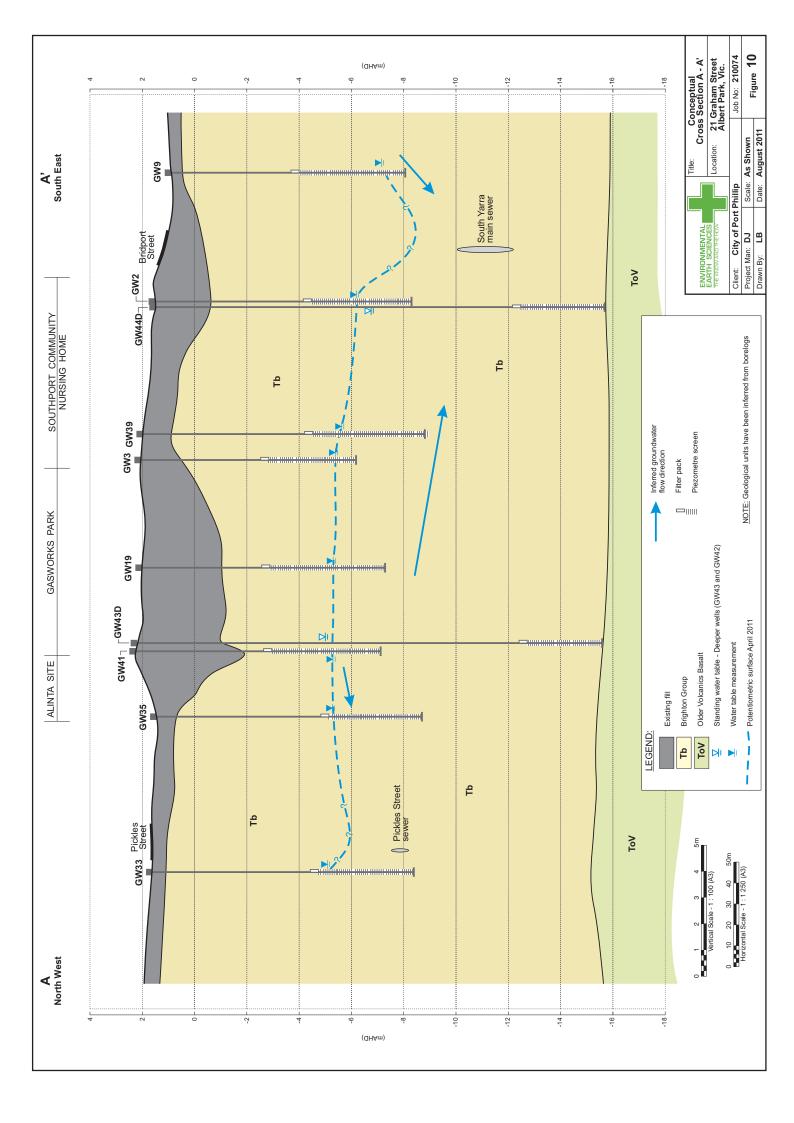


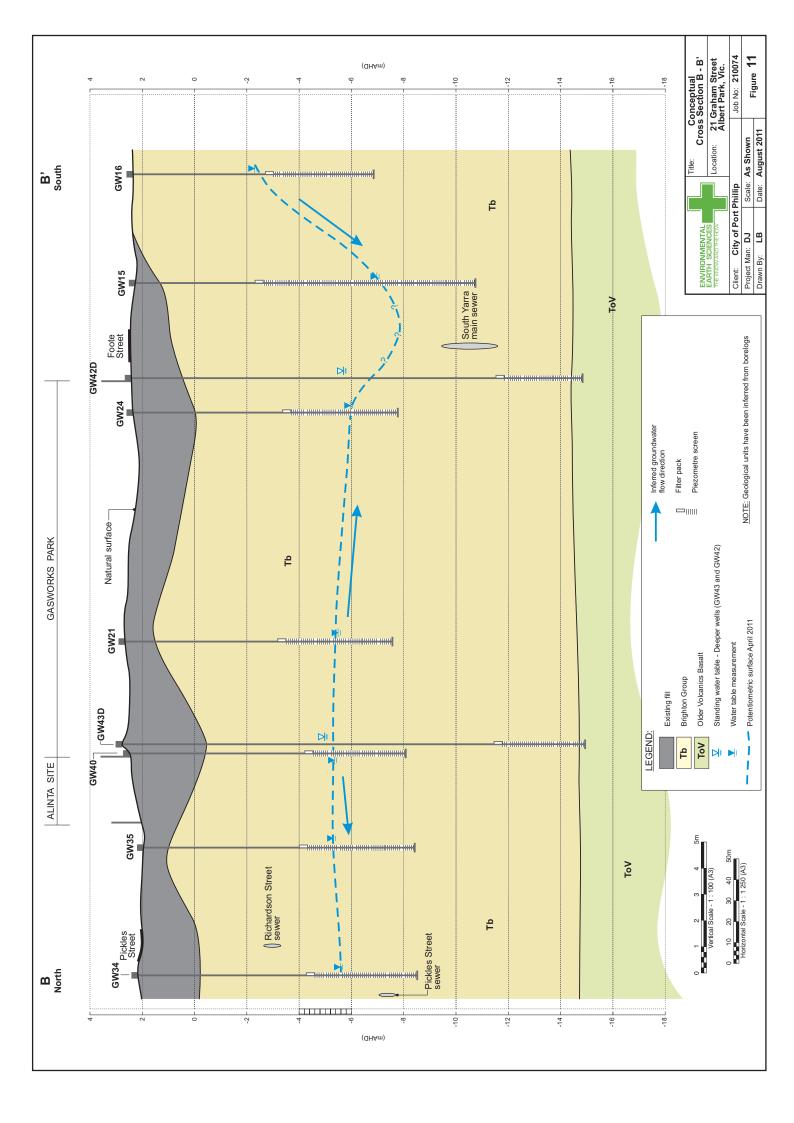




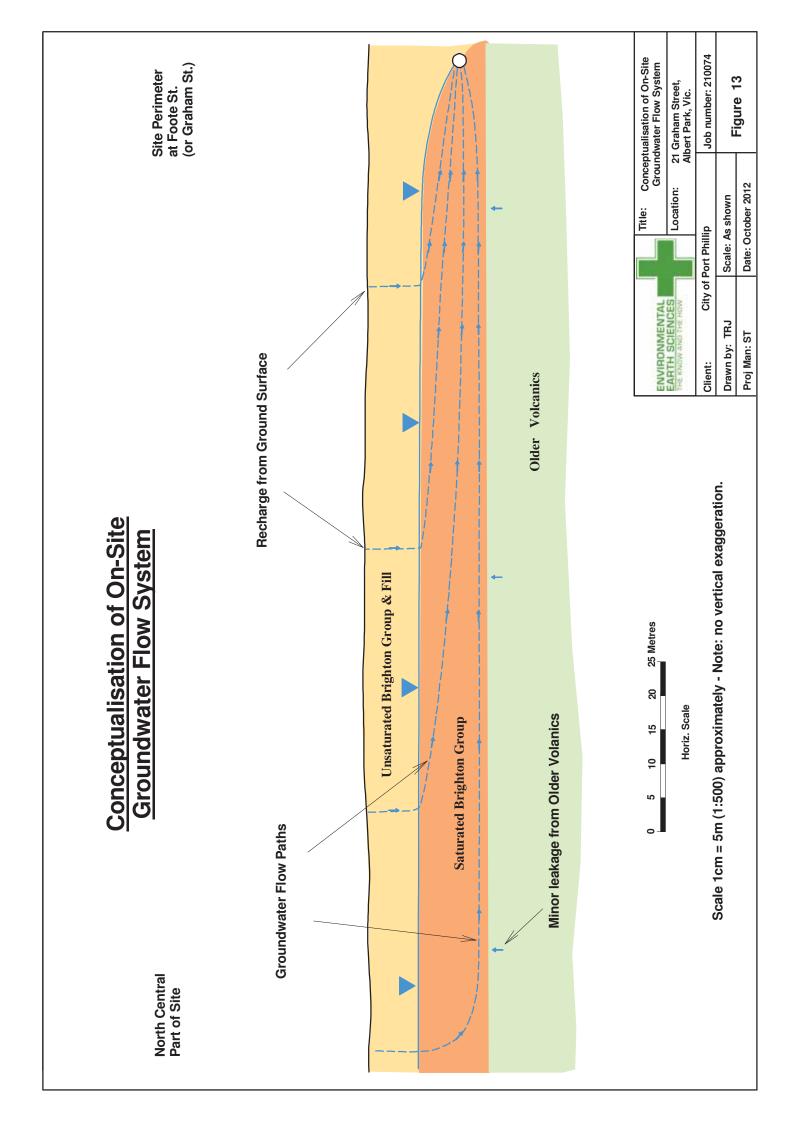














TABLES



TABLE 1 SEPP GOV GROUNDWATER BENEFICIAL USES

		Seg	ments (mg/L Ti	DS)	
Beneficial Uses	A1 (0-500)	A2 (501-1000)	B (1001-3500)	C (3501-13000)	D (>13000)
1. Maintenance of ecosystems	✓	✓	√	√	✓
2. Potable Water supply:					
Desirable	✓				
Acceptable		✓			
3. Potable mineral water supply	✓	✓	✓		
4. Agriculture, parks & gardens	✓	√	✓		
5. Stock watering	✓	√	✓	✓	
6. Industrial water use	✓	√	✓	✓	✓
7. Primary contact recreation (e.g. bathing, swimming)	✓	✓	✓	✓	√
8. Buildings and structures	✓	✓	✓	✓	√

TABLE 2 GROUNDWATER WELL CLASSIFICATION (SEPP GOV)

SEPP Segment	Groundwater wells
Segment A ₁ (TDS 0 - 500 mg/L)	GW11, GW13, GW14, GW15, GW16 and GW25
Segment A ₂ (TDS 501 - 1,000 mg/L)	GW9 GW12, GW10, and GW22
Segment B (TDS 1,001 – 3,500 mg/L)	GW1, GW3, GW4, GW6, GW7, GW8, GW19, GW21, GW26, GW28, GW29, GW30, GW31, GW32, GW33, GW34, GW36, GW37, GW39, GW40 and GW41
Segment C (TDS 3,501 – 13,000 mg/L)	GW35, GW24, GW38 and GW44
Segment D (TDS > 13,000 mg/L)	GW43 and GW42

REGISTERED GROUNDWATER WELLS WITHIN A 3 KM RADIUS OF THE SOUTH MELBOURNE GASWORKS TABLE 3

Distance from site	Distance from site (m)	Number of wells	Use	Depth range (m)	Lithology	SWL (metres below ground level (m BGL))	Yield (L/sec)	EC
	115 – 970	21	unknown	4 – 150	Sand ^b	1.9 ^a	0.8 ^a	1
7	66 – 832	16	investigation	4 – 10	Sand, silt, clay	ı	1	1
	443 – 970	0	stock and/or domestic	3.91 – 32	Sand, basalt (> 17m) ^a	2 - 8	0.2 – 5.8	ı
	844 – 889	ю	irrigation	6 – 6.1	1	ı	1	ı
	1,182 – 1,911	13	stock and/or domestic	3 – 15	Sand and marl ^a	1.6 - 3	0.4 – 1.1	330 ^a
2 km	1,387 – 1,432	24	investigation	9	1	ı		1
	1,001 – 1,909	20	unknown/other	14 – 52	Sand, basalt ^b	1.7 ^a	0.7 ^a	1
	1,078 – 1,972	52	investigation	2.5 – 20	Sand, silt	0.6 – 2.8	1	1
	2,065 – 2,982	80	stock and/or domestic	4 – 10	1		1	1
2 km – 3 km	2,052 – 2,938	64	investigation	4 – 36	Clay, silt	2 – 3.4	1	1
	2,031 – 2,983	59	unknown/other	5 – 85	Sand, silt, clay, sandstone ^a	2 – 4.8	0.6ª	1

Notes: –: ი; ო

- = no data available.

^a = information only available for one well in this field.

^b = information only available for two wells in this field.



TABLE 4 SUMMARY OF EXISTING GROUNDWATER MONITORING WELLS

Location	Groundwater Monitoring 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

Notes:

- 1.
- *not included in the April 2011 sampling.

 D indicates wells are "deep" and installed at the base of the aquifer hydrogeological unit (Brighton Group Sediments). 2.

TABLE 5 NEW GROUNDWATER WELL LOCATIONS AND RATIONALE

Groundwater well ID	Approx well depth (m BGL)	Screen depth (m BGL)	Rationale
GW37	10	7 - 10	Assess potential offsite impact to residential areas east of Southport Community Nursing Home.
GW38	10	7 - 10	Assess potential offsite impact to residential areas east of Southport Community Nursing Home.
GW39	10	7 - 10	Potential source of groundwater pollution (i.e. liquor tank, purifiers and tar tank).
GW40	10	7 - 10	Potential source of groundwater pollution from Gasworks Park offsite to the Alinta site (i.e. north).
GW41	10	7 - 10	Potential source of groundwater pollution from Gasworks Park offsite to the Alinta site (i.e. north).
GW42D	18	15 - 18	Assess potential for DNAPL in the vicinity of the former tar tank and further investigate the MAH and PAH concentrations identified in GW24.
GW43D	18	15 - 18	Up-gradient investigation of deep groundwater quality. This deeper well was intended to investigate background conditions.
GW44D	18	15 - 18	Deeper groundwater investigation (potential NAPL) offsite.

Note: Refer to Figure 3 for groundwater well locations.

GROUNDWATER WELL INSTALLATION DETAILS TABLE 6

Well ID	Groundwater Well Construction License No.	Date installed	Easting (m AMG 66)	Northing (m AMG 66)	Level of top of well casing (PVC) (mAHD)	Level of gatic cover (ground surface) (mAHD)	Well screen interval (m)	Construction details
GW37	WLE049168	1/03/2011	319 529.2	5 809 703.9	1.892	1.957	7-11 m	S – 6.5-11.0 m B – 5.5-6.5 m G – 0-5.5 m
GW38	WLE049168	28/02/2011	319 558.0	5 809 681.8	1.874	1.968	6-10 m	S – 5.5-10.0 m B – 4.5-5.5 m G – 0-4.5 m
GW39	WLE049168	1/03/2011	319 437.0	5 809 674.5	2.331	2.414	7-11.5 m	S – 6.5-11.5 m B – 5.5-6.5 m G – 0-5.5 m
GW40	WLE049168	28/02/2011	319 332.3	5 809 734.2	2.149	2.317	6.5-10.5 m	S – 5.5-10.5 m B – 4.5-5.5 m G – 0-4.5 m
GW41	WLE049168	28/02/2011	319 364.8	5 809 748.0	2.485	2.583	6.0-10.0 m	S – 5.5-10.0 m B – 4.5-5.5 m G – 0-4.5 m
GW42D	WLE049168	3/03/2011	319 377.1	5 809 565.2	2.518	2.609	14.0-17.0 m	S – 13.5-17.0 m B – 13.0-13.5 m G – 0-13.0 m
GW43D	WLE049168	1/03/2011	319 386.6	5 809 761.7	2.262	2.320	14.2-17.2 m	S – 13.7-17.2 m B – 13.2-13.7 m G – 0-13.2 m
GW44D	WLE049168	2/03/2011	319 519.2	5 809 682.4	2.070	2.149	14.8-17.8 m	S – 14.2-17.8 m B – 13.4-14.2 m 0-13.4 m

Notes:

S = Sand.
B = Bentonite.
G = Grout.
see Figures 4 and 5 for further detail regarding deeper well construction.

TABLE 7 GROUNDWATER WELL DEVELOPMENT DETAILS

Notes: 1. 2.

SP = submersible pump.

* = existing wells unable to be developed due to access constraints. Wells were purged dry and left to recharge prior to sampling.

9-L

TABLE 8 FIELD GROUNDWATER PARAMETER MEASUREMENTS

Groundwater		4.6	Screen	Screen interval	Itervai		CL	i	- 1	000	F		
Well	Deptu		length	Тор	Bottom	Ed.	2	5	ed.	3	dwal	Jnopo	Colour
Units	mBGS	mAHD	E	mAHD	٥	ı	mS/cm	Λm	,	mdd	ွ	1	
GW1	-	-7.92	-	-	-	7.17	4816	74	1.25	1.86	21.2	none	light brown
GW3	10.00		1	1	-7.920	9.9	5550	-73	-1.23	1.18	18.6	mild HC	light brown
GW4	!	-	-	-	-	7.11	930	185	3.13	3.38	18.6	1	light brown
GW5	10.00	-7.89	-	1	-				0.00		,	,	
GW6	10.00	-8.38	4.5	-3.88	-8.38	6.97	1945	93	1.57	3.39	20.0	earthy	cloudy brown
GW7	10.00	-8.17	4.5	-3.67	-8.17	6.52	2510	482	8.14	0.18	21.8	none	light brown
GW8	10.00	-8.17	4	-4.17	-8.17	6.27	4000	-61	-1.03	0.2	19.2	none	cloudy brown
GW9	10.00	-8.14	4	-4.14	-8.14	6.65	781	74	1.25	3.91	20.8	mild HC	cloudy brown
GW10	10.00	-8.01	4	-4.51	-8.51	5.23	930	228	3.85	2.57	18.7	none	light yellow
GW11	9.00	-7.15	4	-3.15	-7.15	5.55	471	268	4.53	4.52	18.6	mild HC	turbid yellow/white-milky
GW12	10.00	-8.28	4	-4.28	-8.28	6.91	587	94	1.59	3.88	19.1	slight HC	clear
GW13	10.00	-8.09	4	-4.09	-8.09	6.25	540	134	2.26	5.07	19.3	none	turbid yellow/brown
GW14	10.00	-7.95	4	-3.95	-7.95	6.67	546	42	0.71	1.99	19.4	none	turbid yellow/brown
GW15	13.00	-10.69	80	-2.69	-10.69	6.11	553	197	3.33	2.07	18.1	none	Cloudy orange/brown
GW16	9.00	-6.43	4	-2.43	-6.43	7.2	242	42	0.71	2.01	19.4	none	turbid yellow/grey
GW18	10.00	-7.47	4	-3.47	-7.47		1						
GW19	10.00	-7.59	4	-3.59	-7.59	5.43	3760	20	0.84	0.28	17.0	mild NAP	light yellow
GW20	10.00	-7.80	4	-3.80	-7.80		1						
GW21	10.00	-7.37	4	-3.37	-7.37	5.44	2390	130	2.20	0.52	16.6	mild PAH	clear
GW22	10.00	-7.46	4	-3.46	-7.46	6.17	1198	636	10.74	2.48	18.0	slight HC	clear
GW23	10.00	-7.23	4	-3.23	-7.23	6.52	2269	362	6.11	99.0	17.8	slight HC	cloudy brown
GW24	10.00	-7.28	4	-3.28	-7.28	7.25	7450	107	1.81	0.18	19.5	mild HC	clear
GW25	10.00	-8.14	4	-4.14	-8.14	6.45	517	98	1.45	3.95	20.4	slight HC	cloudy brown
GW26	12.00	-10.16	2	-5.16	-10.16	6.9	3190	572	9.66	0.12	21.8	none	cloudy brown
GW27	10.50	-8.56	4	-4.36	-8.36	7.3	5817	11	0.19	3.67	18.6	none	clear
GW28	10.00	-8.19	4	-4.19	-8.19	7.65	2035	-111	-1.88	4.76	19.8	none	clear
GW29	12.00	-9.93	9	-3.93	-9.93	7.22	3600	25	0.42	4.97	19.6	none	light brown
GW30	10.50	-8.60	2	-3.60	-8.60	7.37	4760	33	0.56	4.79	17.7	mild NH₄ (?)	clear
GW31	10.50	-8.68	4	-4.68	-8.68	7.06	2157	6	0.15	0.35	19.3	none	cloudy brown
GW32	10.50	-8.60	4	-4.50	-8.50	7.69	1545	7	0.12	4.93	19	none	cloudy brown
GW33	10.50	-8.61	4	-4.61	-8.61	7.39	6100	70	1.18	6.7	19.5	none	cloudy brown
GW34	10.50	-8.48	4	-4.48	-8.48	7.52	4267	-22	-0.37	5.34	20.6	none	cloudy grey
GW35	10.50	-8.84	4	-4.74	-8.74	7.18	12016	-70	-1.18	3.3	19.9	none	turbid brown
GW36	10.40	-8.41	4	-4.41	-8.41	7.08	5450	93	1.57	3.27	18.1	none	clear
GW37	11.00	-9.04	4	-5.04	-9.04	7.06	3866	69-	-1.17	2.90	18.9	organic	cloudy grey
GW38	10.00	-8.03	4	4.03	-8.03	6.88	5510	-47	-0.79	2.79	18.8	mild PAH	turbid grey
GW39	11.50	-9.09	4.5	4.59	-9.09	6.52	3750	06-	-1.52	0.41	18.1	mild HC	cloudy dark grey
GW40	10.50	-8.18	4	-4.18	-8.18	7.1	1500	197	3.33	4.28	19.7	none	clear
GW41	10.00	-7.42	4	-3.42	-7.42	7.15	1663	135	2.28	3.77	19.2	none	light brown
GW42(D)	17.00	-14.39	3	-11.39	-14.39	6.3	31300	88	1.50	4.66	18.2	none	slight turbid yellow/brown
GW43(D)	17.40	-15.08	3.2	-11.88	-15.08	6.75	31833	120	2.03	0.03	19.8	none	clear
GW44(D)	18.00	-15.85	3.2	-12.65	-15.85	6.72	12383	o	0.15	0.09	18.6	strong NH₄/HC	dark grey/purple

TABLE 9 GROUNDWATER STANDING WATER ELEVATIONS

	4	Dowith to Wistor	som to noisevel 3		Over proper lovel
Well ID		o water	Clevation of measuring point (mAnd)	dina point (manb)	Stationing water level
	from Top of Casing (mbtoc)	below ground surface (mbgl)	TOC mAHD	GS mAHD	SWL (mAHD)
GW01	7.46	7.47	1.96	1.97	-5.50
GW02	8.17	8.28	1.97	2.08	-6.20
GW03	8.00	8.06	2.375	2.435	-5.63
GW04	8.52	8.68	2.34	2.5	-6.18
GW05	8.10	8.27	1.94	2.11	-6.16
GW06	6.80	6.87	1.555	1.625	-5.25
GW07	7.43	7.49	1.775	1.835	-5.66
GW08	76.7	8.09	1.71	1.83	-6.26
GW09	8.82	9.01	1.67	1.86	-7.15
GW10	8.14	8.26	1.875	1.995	-6.27
GW11	7.21	7.31	1.75	1.85	-5.46
GW12	7.82	7.92	1.62	1.72	-6.20
GW13	7.60	7.69	1.82	1.91	-5.78
GW14	7.18	7.29	1.94	2.05	-5.24
GW15	9.10	9.22	2.195	2.315	-6.91
GW16	4.85	4.92	2.505	2.575	-2.35
GW18	Dry	Dry	2.43	2.53	Dry
GW19	7.65	7.75	2.31	2.41	-5.34
GW20	7.89	7.99	2.105	2.205	-5.79
GW21	8.01	8.11	2.535	2.635	-5.48
GW22	8.16	8.37	2.335	2.545	-5.83
GW23	8.78	8.885	2.67	2.775	-6.11
GW24	8.89	8.79	2.62	2.72	-6.07
GW25	7.75	7.88	1.73	1.86	-6.02
GW26	7.52	7.63	1.73	1.84	-5.79
GW27	8.22	8.29	1.87	1.94	-6.35
GW28	7.93	8.03	1.71	1.81	-6.22
GW29	8.49	8.62	1.945	2.075	-6.55
GW30	8.89	9.00	1.79	1.9	-7.10
GW31	7.10	7.24	1.68	1.82	-5.42
GW32	7.16	7.26	1.8	1.9	-5.36
GW33	7.22	7.32	1.79	1.89	-5.43
GW34	7.64	7.79	1.87	2.02	-5.77

Notes: - 2. ... 33. ... 4. ... 6.

SWL = standing water level, mAHD = metres Australian Height Datum, mbgl = metres below ground level, TOC = top of casing, and GS = ground surface. Richardson St sewer relative level = -3,75 mAHD.
Graham St sewer relative level = -1,12 mAHD.
Bridport St sewer relative level = -1,12 mAHD.
Pickle St sewer relative level = -8,10 mAHD.
Pickle St sewer relative level = -8,10 mAHD.
Pickle St sewer relative level = -8,10 mAHD.

TABLE 9 GROUNDWATER STANDING WATER ELEVATIONS (CONTINUED)

	Measured Depth to Water	oth to Water	Elevation of measuring point (mAHD)	ring point (mAHD)	Standing groundwater elevation
	from Top of Casing (mbtoc)	below ground surface (mbgl)	TOC mAHD	GS mAHD	SWL (mAHD)
GW35	6.86	6.935	1.59	1.665	-5.27
GW36	7.21	7.28	1.92	1.99	-5.29
GW37	8.12	8.185	1.892	1.957	-6.23
GW38	8.99	9.084	1.874	1.968	-7.12
GW39	8.15	8.233	2.331	2.414	-5.82
GW40	7.51	7.678	2.149	2.317	-5.36
GW41	7.79	7.888	2.485	2.583	-5.31
GW42(D)	8.32	8.411	2.518	2.609	-5.80
GW43(D)	7.30	7.358	2.262	2.32	-5.04
GW44(D)	8.87	8.949	2.07	2.149	-6.80

Notes:

SWL = standing water level, mAHD = metres Australian Height Datum, mbgl = metres below ground level, TOC = top of casing, and GS = ground surface.

Richardson St sewer relative level = -3.75 mAHD.

Bridpard St sewer relative level = -1.1.27 mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sewer relative level = -8.1 to mAHD.

Prick St sew

Well ID	Measured Depth to Water (mbtoc)	Pressure head, i.e. height of water column above screen (m)	TDS (mg/L)	Temp (C)	Calculated Density (Kg/m³)	Difference in density against pure water (1,000 kg/m³)	Calculated Freshwater Pressure Head Correction Factor (m)	Calculated equivalent freshwater hydraulic head (m)
GW42(D)	8.32	5.6	23,400	18.2	1016	1.6%	60.0+	-5.71
GW43(D)	7.30	6.8	19,400	19.0	1013	1.3%	+0.09	-4.95
GW44(D)	8.87	5.8	8,860	18.6	1005	0.5%	+0.03	-6.77

TABLE 10 AQUIFER PROPERTIES EVALUATED FROM SLUG TESTS

Groundwater Well	Test	Method	Coarsest Lithology in Screened Interval	Hydraulic conductivity, K (m/day)	Transmissivity, (m²/day)
GW7	rising	Bouwer and Rice	Clayey Sand	0.14	ı
GW40	rising	Bouwer and Rice	Fine Sand with minor clay	0.28	ı
GW30	rising	Bouwer and Rice	Silty Sand	1.66	1
GW37	rising	Bouwer and Rice	Medium to Coarse Sand with some clay	0.67	ı
Median for shallow wells				0.48	1
GW42D	falling	Cooper-Bredehoeft Papadopulos (CBP)	Medium Sand with minor clay	ı	0.015
		Bouwer and Rice	Medium Sand with minor clay	0.0040	,
		CBP	Fine Sand with minor clay	1	0.566
	9 1	Bouwer and Rice	Fine Sand with minor clay	0.0930	,
GW44	200	CBP	Fine Sand with minor clay	ı	0.601
	D E E E	Bouwer and Rice	Fine Sand with minor clay	0.102	,
	mean of GW44 rising and falling	Bouwer and Rice, and CBP	Fine Sand with minor clay	0.098	0.58
Median for deeper wells				0.051	0:30
Mean (Shallow and deeper wells)	(8)			0.27	0.30*

Note: *For deep wells only

TABLE 11 INORGANIC GROUNDWATER RESULTS SUMMARY - ONSITE WELLS

				Guide	Guidelines			GW1	GW3	GW4	GW19 (GW21 (GW22 (GW23 (GW24 C	GW31 C	GW39 C	GW35 C	GW40 GV	GW41 GW42D	42D GW43D	3D GW44D	45 D
Analyte	LOR	Ecosystem ^a	Health	Recreation ^c	Livestock ^a	<u>Irrigation^a</u>	Trade waste ^d	18/4/11	20/4/11	20/4/11	20/4/11 2	20/4/11 2	20/4/11 2	20/4/11 2	20/4/11	18/4/11 2	20/4/11	18/04/1 2	20/4/11 20/	20/4/11 20/4/11	./11 20/4/11	711 20/4/11	/11
pH Value	0.01	I	6.5-		1	4.0 - 9.0	6.0-10.0	7.17	9.9	7.11	5.43	5.44	6.17	6.52	7.25	7.06	6.52	7.18	7.1	7.15 6.3	3 6.75		6.72
TDS	2	ı	1000*	ı	3000	200	ı	2780	3410	1010	2320	1590	662	1280	4430	1440	3110	6450	1040	1260 23400	19400		8860
Bicarbonate	-	I	ı	I	I	ı	ı	712	295	374	83	48	290	397	828	295	262	648	204 2	273 17	174 500		1074
Sulfate	-	ı	200	10000	1000	ı	100	120	2070	222	200	981	209	388	2340	227	2250	503	28 2	226 14	14800 1090	00 2050	20
Chloride	-	I	250*	I	I	200	-	1040	64	22	99	74	06	38	42	220	22	3400	385 2	298 3380	0986 08	450	0
Calcium	-	I	ı	I	I	1000	I	196	232	20	198	277	96	22	55	42	280	86	128 1	147 37	375 427		399
Magnesium	-	I	ı	1	009	ı	I	210	43	20	69	82	28	2	38	51	81	205	42 (66 787	7 694		169
Sodium	-	I	ı	I	1	120	ı	400	62	180	51	24	111	39	29	454	89	2490	55	48 2450	50 5140	594	41
Potassium	-	I	1	1	1	ı	I	53	16	26	43	38	35	80	21	49	17	43	27 2	24 27	217 212		48
Free Cyanide	0.004	ı	ı	ı	ı	ı	ı	0.012	0.005	0.1	<0.004	<0.004	<0.004	<0.004	> 10.0	<0.004	> 900.0	< 40.00>	<0.004	<0.004 0.013	13 <0.004		0.186
Total Cyanide	0.004	0.004	0.08	1.6	I	ı	10	0.016	0.07	0.32	0.08	0.02	0.165	0.086	0.219	0.118	0.093	0.039	0.01	0.027	34 <0.004		3.98
WAD Cyanide	0.004	I	ı	I	1	I	I	0.014	600.0	0.159	<0.004	<0.004	900.0	900.0	0.021 <	<0.004	> 600.0	<0.004	<0.004 <0	<0.004 0.0	0.044 <0.004		0.865
Fluoride	0.1	ı	1.5	30	2	1	30	1.3	1.3	9.0	9.0	4.0	9.0	0.1	0.3	3.1	1	1.8	1	1.4	0.3		9.0
Ammonia as N	0.01	0.91	0.5*	0.5*/1.5#	I	ı	200	1.43	099	0.29	184	26.8	0.99	201	854	10.4	430	4.25	8.90	0.31	2170 4.11		1,190
Nitrite as N	0.01	1	ı	ı	30	ı	I	0.1	<0.01	60.0	0.01	<0.01	0.14	0.05	0.02	0.03	0.55	0.01	0.01 <0	<0.01 0.02	20.01		0.03
Nitrate	0.01	I	20	1000	400	I	I	1.73	<0.04	9.69	99.0	0.44	3.5	2.13	23.7	90.9	2.92	0.04	1.24	0.4 <0	<0.04 0.04		0.13
Phosphate	0.01	ı	ı	I	I	ı	ı	<0.03	<0.03	0.18	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	<0.03	<0.03	<0.03 <0	<0.03 <0	<0.03 0.09		<0.03
Aluminium	0.01	I	0.2*	ı	2	ιΩI	I	<0.01	<0.01	<0.01	0.17	0.14	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	<0.01 <0	<0.01 3.91	10:0>		<0.01
Arsenic	0.001	0.0023	0.007	0.14	9.0	0.1	-	0.051	0.01	0.12	0.799	0.156	0.008	0.077	0.039	0.272	0.011	0.286	0.007	0.014 0.031	31 0.002	0.038	38
Cadmium	0.000	0.0055	0.002	0.04	0.01	0.01	2	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001 <(<0.0001 <(<0.0001 <(<0.0001 <(<0.0001 <0.0	<0.0001 0.0	0.0012 0.0025	25 <0.0001	100
Cobalt	0.001	0.001	ı	I	-	0.05	10	0.002	0.021	0.001	0.079	0.079	0.003	0.002	0.001	<0.001	0.04	0.002	<0.001 0.0	0.001	9.66	75 0.051	21
Copper	0.001	0.0013	2	40	0.5	0.2	10	0.005	0.001	900.0	0.001	0.004	0.003	<0.001	0.004	0.002	0.001	0.002	0.001 0.0	0.001 0.051	51 0.007		0.009
Lead	0.001	0.0044	0.01	0.2	0.1	0.2	10	<0.001	<0.001	0.001	<0.001	0.01	> 900.0	<0.001	0.002	<0.001	<0.001	<0.001	<0.001 0.0	0.001 0.0	0.002 <0.001		<0.001
Manganese	0.001	ı	0.5	10	I	ı	10	0.197	4.18	0.01	14.2	2.19	0.045	0.037	0.019	0.083	5.5	0.792	0.124 0.	0.132	120 7.63		10.5
Nickel	0.001	0.07	0.02	9.0	-	0.2	10	0.002	0.014	0.002	0.021	0.017	0.053	0.041	0.012	0.002	0.029	0.007	0.005 <0	<0.001	0.067		0.072
Selenium	0.01	0.003	0.01	0.2	0.02	0.02	10	<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	<0.01	<0.01	0.01	
Zinc	0.005	0.015	*6	1	20	7	10	0.024	0.017	<0.005	0.129	0.082	0.041	0.033	0.013	0.016	0.012	> 410.0	<0.005 <0	<0.005	0.016		0.032
Boron	0.05	I	4	80	2	0.5	25	1.3	1.3	0.05	1.86	1.64	0.77	1.14	0.32	2.65	1.57	1.39	0.34 0.	0.67	36 1.14		1.02
Iron	0.05	I	ı	I	I	0.2	100	<0.05	27	0.23	309	53.8	90.0	3.69	0.13	90.0	29.5	60.0	<0.05	<0.05	12.9 0.4	11.1	-:
Mercury	0.000	0.0004	0.001	0.02	0.002	0.002	~	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001 <(<0.0001 <(<0.0001 <(<0.0001 0	0.0002 0.0	0.0002 0.0	0.0002 <0.0001		<0.0001
Chromium VI	0.01	0.0044	0.05	20	-	0.1	10	<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

All results reported in mg/L.

Standard Secondary CXARMCANZ (2000) Australian and New Zealand guidelines, italics = in excess of frecreation guidelines, bold = in excess of livestock guidelines, underline = in excess of irrigation guidelines, and bold irrigation guidelines, and bold irrigation guidelines, italics = in excess of recreation guidelines. Standards for fresh and manine water quality (ecosystem criteria are form and New Zealand guidelines for fresh and manine water quality (ecosystem criteria are form and NECC/ARMCANZ (2000) Australian and New Zealand guidelines for fresh and manine water quality (ecosystem criteria are form and New Zealand guidelines for fresh and manine water quality (ecosystem criteria are form and New Zealand guidelines for fresh and manine water form and New Zealand guidelines for fresh and manine water and 100 mL incidental consumption per recreational swimming session.

Eaguidelines taken from Maxima fresh and fresh fresh from South East Water (2011) Standards for Trade Waste Discharge to the Sewer System.

Eaguidelines are from the fresh from South East Water (2011) Standards for Trade Waste Discharge to the Sewer System.

Eaguidelines are from the fresh from South East Water (2011) Standards for Trade Waste Discharge to the Sewer System.

Eaguidelines are from the from South East Water (2011) Standards for PH as per Table 83.7 of ANZECC/ARWCANZ (2000) and Cu, Cr, Cd, Pb, Ni and Zn ecosystem criteria have not been adjusted (upwards) for pH as per Table 83.7 of ANZECC/ARWCANZ (2000) and Cu, Cr, Cd, Pb, Ni and Zn ecosystem criteria have not been adjusted (upwards) for pH as per Table 83.7 of ANZECC/ARWCANZ (2000) and Cu, Cr, Cd, Pb, Ni and Zn ecosystem criteria have not been adjusted (upwards) for pH as per Table 83.7 of ANZECC/ARWCANZ (2000) and Cu, Cr, Cd, Pb, Ni and Zn ecosystem criteria have not been converted to allow for the comparison against guidelines. Nitrate No₂= (x 4.43), Reactive Phosphate PO₄ (x 3.06), Total Alkalinity as CaCO3 to Bicarbonate HCO₂ (x 1.219). - 7 6 4 6 6 7 8 6 7

A	0			Guid	Guidelines			DUP1	SPLIT1	DUP3	SPLIT3	DUP4	SPLIT4
Analyte	א ג	Ecosystem ^a	Health	Recreation ^c	Livestock ^a	<u>Irrigation</u> ^a	Trade waste ^d	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11
pH Value	0.01	ı	6.5-8.5*		ı	4.0 - 9.0	6.0-10.0	6.49	6.4	7.34	7.31	6.22	6.29
TDS	5	ı	1000*	ı	3000	200	I	3270	3100	4170	4340	22,600	21,500
Bicarbonate	-	ı	ı	1	1	ı	ı	184	186	682	684	136	140
Sulfate	-	1	900	10000	1000	1	100	2140	1950	2710	2470	14,800	15,000
Chloride	-	1	250*	1	ı	<u>700</u>	ı	99	64	43	46	2620	2920
Calcium	-	1	ı	1	1	1000	1	246	243	20	47	396	386
Magnesium	-	ı	ı	ı	009	ı	ı	46	45	36	35	812	785
Sodium	-	ı	1	ı	ı	120	ı	70	89	22	55	2580	2450
Potassium	-	ı	ı	ı	I	ı	I	16	15	16	16	224	216
Free Cyanide	0.004	ı	ı	ı	I	ı	I	0.007	0.014	0.01	0.011	0.016	0.021
Total Cyanide	0.004	0.004	0.08	1.6	1	1	10	0.07	0.072	0.253	0.211	0.509	0.456
WAD Cyanide	0.004	1	1	ı	1	ı	ı	0.016	0.014	0.021	0.024	0.046	0.037
Fluoride	0.1	1	1.5	30	2	~ I	30	7-	7.	0.3	0.3	~	~
Ammonia as N	0.01	0.91	0.5*	0.5*/1.5#	I	ı	200	450	458	1000	1020	2100	2160
Nitrite as N	0.01	ı	ı	I	30	ı	ı	<0.01	<0.01	0.04	0.02	0.05	0.02
Nitrate	0.01	ı	50	1000	400	ı	ı	<0.0443	<0.0443	17.45	16.44	<0.0443	<0.0443
Phosphate	0.01	1	ı	I	ı	ı	ı	<0.0306	<0.0306	<0.0306	<0.0306	<0.0306	<0.0306
Aluminium	0.01	ı	0.2*	I	2	12	I	<0.01	<0.01	<0.01	<0.01	3.15	3.02
Arsenic	0.001	0.0023	0.007	0.14	0.5	0.1	-	0.012	0.01	0.041	0.043	0.025	0.025
Cadmium	0.0001	0.0055	0.002	0.04	0.01	0.01	2	<0.0001	<0.0001	<0.0001	<0.0001	0.0013	0.0013
Cobalt	0.001	0.001	ı	ı	-	0.05	10	0.024	0.024	0.002	0.002	9.63	9.37
Copper	0.001	0.0013	2	40	0.5	0.2	10	0.001	0.001	0.004	0.003	0.048	0.045
Lead	0.001	0.0044	0.01	0.2	0.1	0.2	10	<0.001	<0.001	0.001	0.002	0.001	<0.001
Manganese	0.001	I	0.5	10	I	-	10	4.03	3.88	0.021	0.02	121	118
Nickel	0.001	0.07	0.02	0.4	-	0.2	10	0.02	0.007	0.013	0.015	2.84	2.81
Selenium	0.01	0.003	0.01	0.2	0.02	0.02	10	<0.01	<0.01	<0.01	<0.01	0.03	0.03
Zinc	0.005	0.015	*6	ı	20	2	10	0.071	0.013	0.012	0.013	2.16	2.15
Boron	0.05	ı	4	80	2	0.5	25	1.37	1.39	0.33	0.34	0.66	0.67
Iron	0.05	ı	ı	ı	I	0.2	100	21.7	20.6	0.1	0.11	12.8	12.4
Mercury	0.0001	0.0004	0.001	0.02	0.002	0.002	1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium VI	0.01	0.0044	0.05	20	1	0.1	10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

All results reported in mg/L.

LOR = laboratory limit of reporting.

LOR = laboratory limit of laboratory limit laboratory laboratory limit laboratory laboratory laborator

^{— =} guideline not available.

Note that ammonia ecosystem criteria have not been adjusted (upwards) for pH as per Table 8.3.7 of ANZECC/ARMCANZ (2000) and Cu, Cr, Cd, Pb, Ni and Zn ecosystem criteria have not been modified (upwards) for hardness based on Table 3.4.3 of ANZECC/ARMCANZ (2000).

Laboratory results have been converted to allow for the comparison against guidelines: Nitrate sa N to Nitrate NO₃ (x 4.43), Reactive Phosphorous P to Phosphate PO₄ (x 3.06), Total Alkalinity as CaCO3 to Bicarbonate HCO₃ (x 1.219).

TABLE 12 INORGANIC GROUNDWATER RESULTS SUMMARY - NORTH WEST WELLS

				Guidelines	Se			GW6	GW32	GW33	GW34	GW36
Analyte	LOR	Ecosystema	Health	Recreation ^c	Livestock ^a	Irrigationa	Trade waste ^d	18/04/11	19/04/2011	18/04/11	18/04/11	20/04/11
pH Value	0.01		6.5-8.5*		ı	4.0-9.0	6.0-10.0	6.97	7.69	7.39	7.52	7.08
TDS	rC	I	1000*	ı	3000	200	ı	1190	1310	3480	3010	3400
Bicarbonate	-	1	ı	1	1	1	1	319	700	382	54	975
Sulfate	-	1	900	10000	1000	1	100	72	216	1930	1440	440
Chloride	-	I	250*	ı	I	200	ı	466	41	1050	243	1320
Calcium	-	I	ı	ı	I	1000	1	44	131	379	30	93
Magnesium	-	ı	ı	1	009	ı	1	51	63	383	54	113
Sodium	-	I	ı	ı	I	120	ı	247	73	672	2776	931
Potassium	-	I	ı	ı	I	I	ı	17	30	168	42	35
Free Cyanide	0.004	I	I	I	I	I	ı	900.0	0.006	<0.004	0.005	<0.004
Total Cyanide	0.004	0.004	0.08	1.6	1	1	10	900.0	0.226	0.058	0.24	0.053
WAD Cyanide	0.004	ı	ı	ı	ı	ı	1	0.007	0.007	0.007	0.01	<0.004
Fluoride	0.1	I	1.5	30	2	τI	30	1.3	2.3	1.2	0.2	1.9
Ammonia as N	0.01	0.91	0.5*	0.5*/1.5#	I	I	200	0.43	12.5	8.43	0.41	3.76
Nitrite as N	0.01	I	ı	ı	30	ı	1	0.01	0.02	0.02	0.04	0.08
Nitrate	0.01	ı	50	1000	400	ı	1	3.94	7.4	18.2	0.31	12.27
Phosphate	0.01	I	ı	ı	I	I	ı	<0.03	<0.03	<0.03	0.33	<0.03
Aluminium	0.01	I	0.2*	ı	2	lΩ	ı	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	0.001	0.0023	0.007	0.14	0.5	0.1	-	0.002	0.318	0.01	0.396	0.025
Cadmium	0.0001	0.0055	0.002	0.04	0.01	0.01	2	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	0.001	0.001	ı	I	-	0.05	10	<0.001	<0.001	0.005	0.002	0.002
Copper	0.001	0.0013	2	40	0.5	0.2	10	0.003	0.003	0.006	0.003	0.004
Lead	0.001	0.0044	0.01	0.2	0.1	<u>0.2</u>	10	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	0.001	1	0.5	10	1	I	10	0.018	0.176	0.32	0.021	0.241
Nickel	0.001	0.07	0.02	0.4	-	0.2	10	0.004	0.002	900.0	0.003	0.005
Selenium	0.01	0.003	0.01	0.2	0.02	0.02	10	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	0.005	0.015	*8	ı	20	2	10	0.01	0.006	0.012	<0.005	600.0
Boron	0.05	1	4	80	5	0.5	25	1.54	0.83	3.38	6.88	1.3
Iron	0.05	I	I	I	I	0.2	100	<0.05	90.0	<0.05	0.1	<0.05
Mercury	0.0001	0.0004	0.001	0.02	0.002	0.002	-	<0.0001	<0.0001	<0.0001	<0.0001	0.0002
Chromium VI	0.01	0.0044	0.05	50	-	0.1	10	<0.01	<0.01	<0.01	<0.01	<0.01

All results reported in mg/L

LOR = laboratory limit of reporting.

^{***} State of the second in the state of the - 2 6 4 5 9 7 8 6 7

⁼ guideline not available.

In any of a solution of available as 1,3 of ANZECC/ARMCANZ (2000) and Cu, Cr, Cd, Pb, Ni and Zn ecosystem criteria have not been modified (upwards) for hardness based on Table 3,4,3 of ANZECC/ARMCANZ (2000) and Cu, Cr, Cd, Pb, Ni and Zn ecosystem criteria have not been modified (upwards) for hardness based on Table 3,4,3 of ANZECC/ARMCANZ (2000).

Laboratory results have been converted to allow for the comparison against guidelines: Nitrate as N to Nitrate NO₃ (x 4,43), Reactive Phosphorous P to Phosphate PO₄ (x 3.06). Total Alkalinity as CaCO3 to Bicarbonate HCO₃ (x 1.219).

TABLE 13 INORGANIC GROUNDWATER RESULTS SUMMARY - NORTH EAST WELLS

				Guidelines	sət			GW7	gW8	GW26	GW27	GW28	GW29	GW30	GW37	GW38	DUP2	SPLITZ
Analyte	LOR	Ecosystem ^a	Health	Recreation ^c	Livestock ^a	<u>Irrigation</u> ^a	Trade waste ^d	2/05/11	19/04/11	2/05/11	20/04/11	19/04/11	18/04/11	19/04/11	19/04/11	19/04/11	19/04/11	19/04/11
pH Value	0.01	ı	6.5-8.5*		ı	4.0-9.0	6.0-10.0	6.52	6.27	6.9	7.3	7.65	7.22	7:37	7.06	6.88	99.2	7.8
TDS	5	1	1000*	ı	3000	200	ı	1640	2740	1740	3610	1540	2450	3050	2260	3770	1600	920
Bicarbonate	-	1	I	ı	1	I	ı	810	278	349	617	447	572	525	547	455	364	390
Sulfate	-	1	200	10000	1000	1	100	225	1510	306	711	167	353	573	1060	585	180	200
Chloride	-	ı	250*	ı	1	200	ı	212	290	564	1100	332	735	1020	154	200	330	300
Calcium	-	1	1	1	1	1000	1	47	130	98	73	30	22	88	29	102	33	32
Magnesium	-	1	ı	1	009	1	ı	35	20	69	75	26	99	83	37	46	27	24
Sodium	-	1	1	1	1	120	1	277	173	469	941	351	602	733	120	301	360	240
Potassium	-	1	1	1	1	1	1	8	80	80	10	9	7	7	6	13	9	8.9
Free Cyanide	0.004	ı	I	1	ı	I	I	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.01	<0.004	0.016
Total Cyanide	0.004	0.004	0.08	1.6	1	1	10	0.047	0.014	0.005	0.004	0.033	<0.004	<0.004	0.39	0.055	0.032	0.029
WAD Cyanide	0.004	ı	I	I	ı	I	ı	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.005	0.013	<0.004	0.009
Fluoride	0.1	1	1.5	30	2	← I	30	1.5	0.2	9.0	-	1.4	0.8	1.6	1.1	0.7	4.1	1.
Ammonia as N	0.01	0.91	0.5*	0.5*/1.5#	1	1	200	112	318	96.0	09:0	76.3	0.10	0.44	358	511	86.4	
Nitrite as N	0.01	1	ı	ı	30	1	ı	0.01	0.05	0.01	0.03	0.01	60.0	0.15	0.44	0.13	0.11	0.005
Nitrate	0.01	ı	20	1000	400	1	ı	<0.0>	1.06	1.32	45.2	<0.04	62.9	19.89	2.08	0.27	<0.0443	<0.0443
Phosphate	0.01	I	I	I	ı	ı	ı	<0.03	<0.03	<0.03	0.12	<0.03	<0.03	<0.03	<0.03	<0.03	<0.0306	<0.0153
Aluminium	0.01	I	0.2*	I	5	lQ.	ı	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.02	0.041
Arsenic	0.001	0.0023	0.007	0.14	0.5	0.1	1	0.084	0.012	0.038	0.003	0.189	0.002	0.064	0.041	0.034	0.201	0.19
Cadmium	0.0001	0.0055	0.002	0.04	0.01	0.01	2	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	0.001	0.001	I	I	-	0.05	10	<0.001	900.0	0.016	0.003	<0.001	0.005	0.007	0.003	0.002	<0.001	<0.001
Copper	0.001	0.0013	2	40	0.5	0.2	10	<0.001	0.003	<0.001	0.004	0.002	0.005	0.003	0.002	0.003	0.001	<0.001
Lead	0.001	0.0044	0.01	0.2	0.1	0.2	10	<0.001	0.001	<0.001	<0.001	0.003	0.002	0.01	<0.001	0.004	0.004	<0.001
Manganese	0.001	1	0.5	10	1	1	10	0.138	1.35	1.97	0.231	0.17	0.403	0.434	0.298	1.08	0.169	0.19
Nickel	0.001	0.07	0.02	0.4	1	0.2	10	0.007	0.066	600.0	0.023	0.014	0.008	0.005	0.008	0.283	0.01	600.0
Selenium	0.01	0.003	0.01	0.2	0.02	0.02	10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.002
Zinc	0.005	0.015	3*	1	20	2	10	0.026	0.052	<0.005	0.019	<0.005	0.021	0.017	0.01	0.014	0.005	0.003
Boron	0.05	I	4	80	2	0.5	25	0.84	0.91	0.3	0.65	0.74	0.46	0.44	0.71	0.96	0.78	0.7
Iron	0.05	ı	I	1	1	0.2	100	0.12	3.5	<0.05	<0.05	<0.05	<0.05	<0.05	0.23	<0.05	<0.05	0.59
Mercury	0.0001	0.0004	0.001	0.02	0.002	0.002	1	<0.0001	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005
Chromium VI	0.01	0.0044	0.05	20	-	0.1	10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005

All results reported in mg/L.

LOR= laboratory limit of reporting.

LOR= laboratory limit of resonand guidelines, italics = in excess of recreation guidelines, indefines, and limit of resonand guidelines or resonand guidelines or resonand guidelines or resonand guidelines.

LOR= laboratory limit of laboratory limit lab

^{1.2.6.4.3.0.7.9.0.1.}

⁼ guideline not available.

I and zo ecosystem criteria have not been adjusted (upwards) for pH as per Table 8.3.7 of ANZECC/ARM/CANZ (2000) and Cu, Cr, Cd, Pb, Ni and Zn ecosystem criteria have not been modified (upwards) for hardness based on Table 3.4.3 of ANZECC/ARM/CANZ (2000).

Laboratory results have been converted to allow for the comparison against guidelines. Nitrate 88 N to Nitrate NO₃ (x 4.43), Reactive Phosphorous P to Phosphate PO₄ (x 3.06), Total Alkalinity as CaCO3 to Bicarbonate HCO₃ (x 1.219).

TABLE 14 INORGANIC GROUNDWATER RESULTS SUMMARY - SOUTH EAST WELLS

				Socilobing	linos			טאס	GW40	GW41	GW12	GW13	GW14	GW45	GW16	GW25
Analyte	LOR		:	,		c:					7			2		2
		Ecosystem	Health	Recreation	Livestock	Irrigation	Trade waste	19/04/11	20/04/11	20/04/11	19/04/11	20/04/11	20/04/11	20/04/11	20/04/11	20/04/11
pH Value	0.01	I	6.5-8.5*		I	4.0-9.0	6.0-10.0	6.65	5.23	5.55	6.91	6.25	6.67	6.11	7.2	6.45
TDS	5	ı	1000*	1	3000	200	1	548	290	288	546	406	368	364	156	360
Bicarbonate	-	I	ı	I	ı	I	I	105	10	12	182	33	100	32	69	92
Sulfate	-	ı	200	10000	1000	1	100	54	303	93	142	126	111	191	46	128
Chloride	-	ı	250*	ı	ı	200	ı	150	99	54	80	75	22	∨	13	100
Calcium	-	ı	ı	1	1	1000	ı	4	4	V	2	4	23	12	9	12
Magnesium	-	1	ı	ı	009	1	1	က	3	٧	-	4	27	12	9	8
Sodium	-	ı	ı	ı	ı	120	1	168	192	88	202	111	43	101	41	132
Potassium	-	ı	ı	ı	ı	I	1	4	3	-	4	10	22	13	7	7
Free Cyanide	0.004	ı	ı	ı	1	ı	ı	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Total Cyanide	0.004	0.004	0.08	1.6	1	1	10	<0.004	<0.004	0.009	<0.004	0.008	0.014	900.0	<0.004	0.008
WAD Cyanide	0.004	1	1	1	1	1	1	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Fluoride	0.1	ı	1.5	30	2	← I	30	0.4	<0.1	<0.1	9.0	<0.1	<0.1	<0.1	<0.1	<0.1
Ammonia as N	0.01	0.91	0.5*	0.5*/1.5#	1	I	200	0.52	0.43	0.04	<0.01	0.07	0.85	0.19	0.01	2.11
Nitrite as N	0.01	ı	ı	ı	30	I	I	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate	0.01	I	20	1000	400	I	I	93	<0.04	0.09	6.87	0.23	0.53	0.27	1.46	1.06
Phosphate	0.01	ı	ı	I	ı	I	I	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Aluminium	0.01	Ι	0.2*	0.2*	2	12	I	<0.01	0.01	0.03	<0.01	<0.01	<0.01	<0.01	0.03	<0.01
Arsenic	0.001	0.0023	0.007	0.14	0.5	0.1	-	0.004	900.0	0.002	0.008	0.003	0.005	<0.001	0.001	0.002
Cadmium	0.0001	0.0055	0.002	0.04	0.01	0.01	2	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	0.001	0.001	ı	1	-	0.05	10	<0.001	0.001	<0.001	<0.001	<0.001	0.004	0.008	<0.001	<0.001
Copper	0.001	0.0013	2	40	0.5	0.2	10	0.001	0.007	0.002	0.005	0.002	0.001	0.002	<0.001	0.003
Lead	0.001	0.0044	0.01	0.2	0.1	2	10	<0.001	<0.001	<0.001	<0.001	0.008	<0.001	0.001	<0.001	<0.001
Manganese	0.001	I	9.0	10	ı	I	10	0.007	0.022	0.002	<0.001	0.014	0.061	0.058	0.002	0.014
Nickel	0.001	0.07	0.02	9.0	-	0.2	10	0.004	0.037	<0.001	0.007	0.003	0.005	0.01	<0.001	0.003
Selenium	0.01	0.003	0.01	0.2	0.02	0.02	10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	0.005	0.015	3*	3*	20	2	10	0.014	0.032	<0.005	<0.005	0.018	0.007	0.016	0.045	<0.005
Boron	0.05	I	4	80	2	0.5	25	0.45	0.18	0.26	0.36	0.87	0.94	1.02	0.51	-1
Iron	0.05	1	I	1	ı	0.2	100	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05
Mercury	0.0001	0.0004	0.001	0.02	0.002	0.002	1	0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium VI	0.01	0.0044	0.05	20	1	0.1	10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

^{— =} guideline not available.

— = guideline not available.

Note that ammonia ecosystem criteria have not been adjusted (upwards) for pH as per Table 8.3.7 of ANZECC/ARMCANZ (2000) and Cu, Cr, Cd, Pb, Ni and Zn ecosystem criteria have not been modified (upwards) for hardness based on Table 3.4.3 of ANZECC/ARMCANZ (2000).

Laboratory results have been converted to allow for the comparison against guidelines: Nitrate No₃= (x 4.4.3), Reactive Phosphorous P to Phosphate PO₄ (x 3.06), Total Alkalinity as CaCO3 to Bicarbonate HCO₃ (x 1.219).

²¹⁰⁰⁷⁴⁻ South_Melbourne_Gasworks-GW Report_V3

TABLE 15 ORGANIC GROUNDWATER RESULTS SUMMARY - ONSITE WELLS

20043 20044 20041 20																					
Marche Marche Marche Marche Marche Marche March Marche Ma				Guidel	L		GW1	GW3	GW4	GW19	GW21	GW22	GW23	GW24	GW31	GW39	GW40	GW41	GW42D	GW43D	GW44D
	Analyte	LOX OX	Ecosystem ^a	Health		Trade waste ^d	18/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	18/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11
Marchite State State Marchite Marc	Oxygenated Compounds																				
Marche M	2-Butanone (MEK)	20	ı	ı	1	ı	<50	<50	<50	<50	<50	<50	<50	<1000	<50	<50	<50	<50	<50	<50	520
No.	Halogenated Aromatic Compo	spun																			
National Polymorphy	Chlorobenzene	22		1	ı	1	[^] 5	<5	<5	<5	<5	×5	<5	<100	V2	V2	^ 2	[^] 5	80	<5	<10
Mathematical Math	Polynuclear Aromatic Hydroca	rbons (P	AH)																		
May	ле A SW 846-8270D	-	02	I	ı	I	× 1.0	1.2	<1.0	<1.0	<1.0	<1.0	1.2	1,820	v.1.0	22.3	<.10	<1.0	21.3	<1.0	142
reportion discrimination of the control of the con	Naphthalene (via USEPA SW 846-8260B – see notes)	D.	ı	1	1	1	۸5	, 5	<5	, 5	\ \ \ \	۸5	^5	4,530	<5	18	<5	\$	33	<5	776
Markey 1 2 2 2 2 2 2 2 2	Acenaphthylene	-	ı	1	ı	1	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	58.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<100
number 1 1	Acenaphthene	-	ı	ı	ı	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.4	<10.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<100
numble discription in the sequence of the seq	Fluorene	-	ı	ı	ı	1	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	20.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<100
1 100 11 100 11 110 11	Phenanthrene	-	2	I	ı	1	<1.0	3.4	6.2	<1.0	<1.0	<1.0	<1.0	<10.0	<1.0	<1.0	1.6	4.5	<1.0	2	<100
theme i i iii iii iii iii iii iii iii iii	Anthracene	-	0.4	I	1	1	<1.0	1.1	2.1	<1.0	<1.0	<1.0	<1.0	<10.0	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	<100
nuthacoration 1 a	Fluoranthene	-	1.4	ı	1	ı	<1.0	2.4	8.4	<1.0	<1.0	<1.0	<1.0	<10.0	<1.0	<1.0	2.8	8.3	<1.0	2.1	<100
1 1 1 1 1 1 1 1 1 1	Pyrene	-	ı	ı	1	ı	<1.0	2	7.8	<1.0	<1.0	<1.0	<1.0	<10.0	<1.0	<1.0	2.6	8.5	<1.0	1.7	<100
1 1 2 2 2 2 2 2 2 2	Benz(a)anthracene	-	ı	ı	ı	ı	<1.0	<1.0	2.8	<1.0	<1.0	<1.0	<1.0	<10.0	<1.0	<1.0	<1.0	4.1	<1.0	<1.0	<100
1 1 1 1 1 1 1 1 1 1	Chrysene	-	ı	ı	ı	ı	<1.0	<1.0	2.3	<1.0	<1.0	<1.0	<1.0	<10.0	<1.0	<1.0	1.2	3.5	<1.0	<1.0	<100
1 1 1 1 1 1 1 1 1 1	Benzo(b)fluoranthene	-	ı	ı	ı	1	<1.0	<1.0	2.7	<1.0	<1.0	<1.0	<1.0	<10.0	<1.0	<1.0	1.2	4.9	<1.0	<1.0	<100
1 1 1 1 1 1 1 1 1 1	Benzo(k)fluoranthene	-	1	1	1	1	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<10.0	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<100
1 1 1 1 1 1 1 1 1 1	Benzo(a)pyrene	0.5	0.2	0.01	0.2	ı	9.0>	9.0>	2.2	<0.5	9.0>	9.0>	9.0>	<5.6	<0.5	9.0>	0.9	3.6	<0.5	<0.5	<53.8
1 1 1 1 1 1 1 1 1 1	Indeno(1.2.3.cd)pyrene	-	ı	ı	ı	ı	<1.0	<1.0	4.1	<1.0	<1.0	<1.0	<1.0	<10.0	<1.0	<1.0	<1.0	2.2	<1.0	<1.0	<100
1 1 1 1 1 1 1 1 1 1	Dibenz(a.h)anthracene	-	ı	ı	1	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<100
Not	Benzo(g.h.i)perylene	-	ı	ı	ı	ı	<1.0	<1.0	4.1	<1.0	<1.0	<1.0	<1.0	<10.0	<1.0	<1.0	<1.0	2.1	<1.0	<1.0	<100
ydrocarbons 5	Sum of PAH	0.5	ı	ı	ı	1	1	11.1	39.3	<1.1	<1.2	<1.2	3.6	1,900	-	26.4	10.3	44.5	21.3	5.8	142
5 — 30 — 2,000 <5	Monocyclic Aromatic Hydroca	rbons																			
5 —	Styrene	2	I	30	1	2,000	<5	<5	<5	<5	<5	<5	<2	193	<5	<5	<5	<5	<5	<5	<10
S L L L L L L L L L	1.2.4-Trimethylbenzene	2	ı	1	1	1	<5	<5	<5	<5	<5	<5	<5	185	<5	<5	<5	<5	<5	<5	49
1 700 1 1 1,000 <1 2 <1 <1 <1 1,00 <1 2 <1 <1 <1 <1 <1 <1	1.3.5-Trimethylbenzene	2	ı	I	1	1	<5	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	<5	<5	18
1 700 1 2 1 1 1 1 2 1 1 1 1 2 1 1 1 2 1 2 1 2	ВТЕХ																				
2 180 800 - 2,000 <2	Benzene	1	200	_	1	1,000	^	2	^	<u>۲</u>	<u>^</u>	<u>۲</u>	16	6,350	<u>۸</u>	28	^	^	355	^	1,350
2 5 300 6,000 <2	Toluene	2	180	800	ı	2,000	<2	<2	<2	<2	<2	<2	<2	318	<2	4	<2	<2	61	12	712
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Ethylbenzene	2	2	300	1	2,000	<2	<2	<2	<2	<2	<2	13	111	<2	2	<2	<2	3	<2	46
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	meta- & para-Xylene	2	ı	ı	ı	I	<2	8	<2	<2	<2	<2	<2	1,550	<2	4	<2	<2	1	<2	285
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	ortho-Xylene	2	I	I	ı	I	<2	<2	<2	<2	<2	<2	က	739	<2	4	<2	<2	6	<2	150
1 - <th>Total Xylenes</th> <th>2</th> <th>ı</th> <th>009</th> <th>20^{b#}</th> <th>2,000</th> <th><2</th> <th>3</th> <th><2</th> <th><2</th> <th><2</th> <th><2</th> <th>3</th> <th>2,290</th> <th><2</th> <th>80</th> <th><2</th> <th><2</th> <th>20</th> <th><2</th> <th>435</th>	Total Xylenes	2	ı	009	20 ^{b#}	2,000	<2	3	<2	<2	<2	<2	3	2,290	<2	80	<2	<2	20	<2	435
	Sum of BTEX	-	ı	ı	ı	1	<u>۲</u>	5	<u>^</u>	<u>^</u>	<u>^</u>	۲	32	0,070	<u>۲</u>	42	<u>۲</u>	^	439	12	2,540

TABLE 15 ORGANIC GROUNDWATER RESULTS SUMMARY - ONSITE WELLS (CONTINUED)

			Guideline	inae		CW1	GW3	GW4	GW19	GW21	GW22	GW23	GW24	GW34	GW39	GWAD	GW41	GWA2D	GW43D	GWAAD
			Onino	20		5	2	1	2	CME	2445	2740	2	2	3	100	1	274450	2	
Analyte	Š	Ecosystem ^a	Health ^b	Recreation ^c	Trade waste ^d	18/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	18/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11
Total Petroleum Hydrocarbons (TPH)	(ТРН)																			
TPH C ₆ - C ₉ Fraction	20	150*	150*	1	1,000	<20	<20	<20	<20	<20	<20	70	9,780	<20	09	<20	<20	470	<20	3,380
TPH C ₁₀ - C ₁₄ Fraction	90	ı	ı	1	1	<50	420	<50	<50	<50	<50	380	14,200	<50	440	<50	<50	2,960	<50	251,000
TPH C ₁₅ - C ₂₈ Fraction	100	I	ı	ı	ı	270	1,440	929	1,110	<100	<100	1,250	6,120	<100	1,590	<100	150	1,560	180	32200
TPH C ₂₉ - C ₃₆ Fraction	20	I	I	1	1	09	150	510	140	<50	<50	170	220	<50	140	70	110	200	210	1770
TPH C ₁₀ - C ₃₆ Fraction (sum)	20	*009	*009	1	1	330	2,010	1,080	1,250	<50	<50	1,800	20,500	<50	2,170	70	260	4,720	390	285,000
Total Recoverable Hydrocarbons (TRH)	ns (TRH)																			
TRH C ₆ – C ₁₀ Fraction	20	I	ı	ı	ı	<20	<20	<20	<20	<20	<20	120	9720	<20	20	<20	<20	480	20	3540
TRH C ₆ – C ₁₀ Fraction minus BTEX	20	ı	I	I	ı	<20	<20	<20	<20	<20	<20	06	<2000	<20	30	<20	<20	40	<20	1000
>TRH C ₁₀ - C ₁₆ Fraction	100	1	I	1	1	<100	610	<100	120	<100	<100	550	14600	<100	069	<100	<100	1750	<100	230000
>TRH C ₁₆ – C ₃₄ Fraction	100	I	ı	ı	ı	290	1300	910	1100	<100	<100	1160	4670	<100	1390	120	220	1410	330	25000
>TPH C ₃₄ - C ₄₀ Fraction	100	I	ı	ı	ı	<100	<100	290	<100	<100	<100	<100	<100	<100	<100	<100	<100	110	150	710
>TPH C ₁₀ - C ₄₀ Fraction (sum)	100	I	I	I	ı	290	1910	1200	1220	<100	<100	1710	19300	<100	2080	120	220	3270	480	256000
TPH Speciation																				
TPH Aromatic C ₁₀ -C ₁₄ Fraction	20	ı	ı	ı	ı	ı	<50	ı	<50	ı	ı	ı	12,100	ı	<50	ı	ı	ı	<50	56,500
TPH Aromatic C ₁₅ -C ₂₈ Fraction	100	I	ı	I	I	ı	<100	ı	<100	ı	I	I	300	I	<100	I	ı	I	<100	800
TPH Aromatic C ₂₉ -C ₃₆ Fraction	90	I	ı	ı	ı	ı	<50	ı	<50	ı	I	I	<50	I	<50	I	ı	I	<50	<50
TPH Aliphatic C ₁₀ -C ₁₄ Fraction	90	ı	ı	1	ı	1	<50	1	<50	ı	ı	I	<50	ı	<50	I	ı	ı	<50	<50
TPH Aliphatic C ₁₅ -C ₂₈ Fraction	100	I	ı	ı	ı	ı	<100	ı	<100	I	I	I	<100	ı	<100	I	ı	ı	<100	<100
TPH Aliphatic C ₂₉ -C ₃₆ Fraction	20	1	ı		1	ı	<50	1	<50	ı	I	I	<50	ı	<50	ı	ı	ı	<50	<50
TPH - Silica gel cleanup																				
TPH C ₁₀ - C ₁₄ Fraction	20	ı	ı	1	1	<100	20	<250	<50	ı	ı	I	12,300	ı	170	ı	Ι	<250	<50	26,600
TPH C ₁₅ - C ₂₈ Fraction	100	I	ı	ı	ı	<200	<100	<200	<100	I	ı	I	250	ı	<100	I	ı	<500	<100	1,180
TPH C ₂₉ - C ₃₆ Fraction	20	I	ı	l	ı	<100	<50	350	<50	I	I	I	<50	I	<50	I	I	<250	<50	<50
TPH C ₁₀ - C ₃₆ Fraction (sum)	90	*009	*009	ı	I	<100	70	350	<50	I	I	I	12,850	I	170	I	I	<250	<50	57,800
Total Recoverable Hydrocarbons (TRH)	ns (TRH) -	- Silica Gel Cleanup	annp																	
>TPH C ₁₀ - C ₁₆ Fraction	100	1	1		-	<200	130	<200	<100	I	1	I	10100	1	230	I	ı	<500	<100	45300
>TPH C ₁₆ – C ₃₄ Fraction	100	1	1	1	1	<200	<100	<200	<100	ı	ı	I	260	ı	<100	ı	Ι	<500	<100	200
>TPH C ₃₄ – C ₄₀ Fraction	100	I	ı	ı	I	<200	<100	<200	<100	I	I	I	<100	I	<100	I	I	<500	<100	<100
>TPH C ₁₀ - C ₄₀ Fraction (sum)	100	I	I	1	ı	<200	130	<500	<100	I	ı	I	10400	I	230	ı	I	<500	<100	45800

210074- South_Melbourne_Gasworks-GW Report_V3

All results reported in 1g/L.
LOR allocatory limit of reporting.

LOR allocatory limit of reporting.

Standard and recess of coopystem guidelines, highlighted = results in excess of health guidelines, italics = in excess of recreation guidelines, and boxed= in excess of trade waste guidelines.

Bauded = results in excess of ecosystem guidelines, highlighted = results in excess of backet and results in excess of ecosystem criteria are for protection of 95 % of marine water species trigger levels);

be guideline taken from NHMRC and ARMCANZ (2004, 2011) Australian drinking water guidelines for health; # indicates aesthetic criteria a dopted from NHMRC and ARMCANZ (2004, 2011).

e recreational criteria based on drinking water health (not aesthetic) guidelines x 20 on allow for 2.01 and 100 mL incidental consumption per recreational swimming session.

e acceptance also and drinking water (2011) States (2011) States

T-17

364 62 3 3 10 10 9 19 19

			Guidelines	ines		DUP1 (GW3)	SPLIT1 (GW3)	DUP3 (GW24)	SPLIT3 (GW24)	DUP4 (GW42D)
Analyte	LOR	Ecosystem ^a	Health	Recreation ^c	Trade waste ^d	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11
Oxygenated Compounds										
2-Butanone (MEK)	20	I	ı	ı	ı	ı	ı	ı	ı	ı
Halogenated Aromatic Compounds										
Chlorobenzene	22	1	I	ı	ı	Ŝ	<5	<100	<100	8
Polynuclear Aromatic Hydrocarbons (PAH)										
Naphthalene (via USEPA SW 846-8270D – see notes)	-	20	ı	ı	ı	4.1	1.6	2980	2710	25.5
Naphthalene (via USEPA SW 846-8260B – see notes)	2	1	I	I	ı	19	8	4020	5180	36
Acenaphthylene	-	I	I	I	ı	₹	∨	23.9	31.5	Ý
Acenaphthene	-	ı	I	ı	ı	₹		<10	<10	٧
Fluorene	-	1	ı	1	ı	V	٧	15.4	14.6	Ÿ
Phenanthrene	-	N	ı	I	ı	₹	٨	<10	<10	, ,
Anthracene	-	4.0	ı	ı	ı	₹	V	<10	<10	V
Fluoranthene	-	4.1	ı	ı	ı	₹		<10	<10	۲
Pyrene	-	ı	I	I	ı	₹	^	<10	<10	٧
Benz(a)anthracene	-		ı	ı	ı	₹	^	<10	<10	<u>۲</u>
Chrysene	-	ı	ı	ı	ı	₹		<10	<10	۲
Benzo(b)fluoranthene	-	ı	ı	ı	ı	₹		<10	<10	۲
Benzo(k)fluoranthene	-	ı	I	ı	ı	₹		<10	<10	۲
Benzo(a)pyrene	0.5	0.2	0.01	0.2	ı	9.0>	<0.6	<5.6	<5.5	9.0>
Indeno(1.2.3.cd)pyrene	-	1	I	ı	ı	₹	<u>^</u>	<10	<10	۲
Dibenz(a.h)anthracene	-	ı	I	I	ı	₹	^	<10	<10	^
Benzo(g.h.i)perylene	-	1	ı	ı	ı	₹		<10	<10	۲
Sum of PAH	0.5	1	1	ı	ı	1.4	1.6	3020	2760	25.5
Monocyclic Aromatic Hydrocarbons										
Styrene	2	I	30	ı	2,000	<5	<5	196	205	<5>
1.2.4-Trimethylbenzene	2	l	I	1	I	\ \5	<5	205	220	<5
1.3.5-Trimethylbenzene	5	-	Ι	Ι	ı	<5	<5	102	<100	<5
ВТЕХ										
Benzene	-	200	-	1	1,000	3	3	5340	5250	334
Toluene	2	180	800	ı	2,000	8	3	282	287	63
Ethylbenzene	2	2	300	Ι	2,000	3	3	116	119	3
meta- & para-Xylene	2	I	Ι	I	ı	9	9	1560	1600	11
ortho-Xylene	2		ı	I	ı	4	4	728	992	6
Total Xylenes	2	ı	009	20 ^{b#}	2,000	10	10	2290	2370	20
Sum of BTEX										

6.0° 2.0°

7 7

γ γ γ 5 γ 5 γ

2 2 2 5 5 5 5 T

V

₹

SPLIT4 (GW42D) 20/4/11

|

∞

36 36

7 7 7

TABLE 15 ORGANIC GROUNDWATER RESULTS SUMMARY - ONSITE WELLS (CONTINUED)

			Guidelines	nes		DUP1 (GW3)	SPLIT1 (GW3)	DUP3 (GW24)	SPLIT3 (GW24)	DUP4 (GW42D)	SPLIT4 (GW42D)
Analyte	LOR	Ecosystem ^a	Health	Recreation ^c	Trade waste ^d	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11
Total Petroleum Hydrocarbons (TPH)											
TPH C ₆ - C ₉ Fraction	20	150*	150*	ı	1,000	30	40	0666	10,200	480	460
TPH C ₁₀ - C ₁₄ Fraction	20	I	ı	I	ı	480	530	14,200	12,400	2910	3070
TPH C ₁₅ - C ₂₈ Fraction	100	1	ı	-	ı	1410	1480	5510	4760	1500	1880
TPH C ₂₉ - C ₃₆ Fraction	20	I	ı	ı	1	230	180	150	140	200	280
TPH C ₁₀ - C ₃₆ Fraction (sum)	20	*009	*009	ı	ı	2120	2190	19,900	17,300	4610	5230
Total Recoverable Hydrocarbons (TRH)											
TRH C ₆ – C ₁₀ Fraction	20	I	ı	ı	ı	0.05	0.05	9.93	10.1	0.48	0.47
TRH C ₆ – C ₁₀ Fraction minus BTEX	20	I	ı	ı	1	0.03	0.03	<2	2.08	90.0	0.02
>TRH C ₁₀ – C ₁₆ Fraction	100	I	ı	ı	1	0.71	0.79	14.2	12.2	1.7	1.84
>TRH C ₁₆ – C ₃₄ Fraction	100	I	ı	ı	ı	1.32	1.34	4.32	3.74	1.37	1.76
>TPH C ₃₄ – C ₄₀ Fraction	100	-	I	-	ı	0.19	0.13	<0.1	<0.1	0.1	0.18
>TPH C ₁₀ – C ₄₀ Fraction (sum)	100	1	ı	-	ı	2220	2260	18,500	15,900	3170	3780

All results reported in 1g/L.
LOR altaboratory limit of reporting.

LOR altaboratory limit of reporting.

Standard are results in excess of coopystem guidelines, highlighted = results in excess of recreation guidelines, and boxed= in excess of coopystem guidelines.

Bauded = results in excess of ecosystem guidelines, highlighted = results in excess of occass of trade waste guidelines.

Baudedie = guidelines taken from ANZECC/ARMCANZ (2000) Australian and New Zealand guidelines for fresh and marine water species trigger levels);

be guideline taken from NHMRC and ARMCANZ (2004, 2011) Australian drinking water guidelines for health; # indicates aesthetic criteria adopted from NHMRC and ARMCANZ (2004, 2011).

e recreational criteria based on drinking water health (not aesthetic) guidelines x 20 to allow for 2. CLday consumption of drinking water and 100 mL incidental consumption per recreational swimming session.

e and expectation of the saver system is the saver system of the saver system from City Wast Water (2011) Stated action of the saver system in the saver saver system in the saver system in the saver system in the saver saver saver system in the saver sav

T-19

TABLE 16 ORGANIC GROUNDWATER RESULTS SUMMARY - NORTH WEST WELLS

			Guidelines	nes		GW6	GW32	GW33	GW34	GW35	GW36
Analyte	LOR	Ecosystem ^a	Health	Recreation ^c	Trade waste ^d	18/04/11	19/04/11	18/04/11	18/04/11	18/04/11	20/04/11
Oxygenated Compounds											
2-Butanone (MEK)	20	1	ı	1	ı	<50	<50	<50	<50	<50	<50
Polynuclear Aromatic Hydrocarbons (PAH)											
Naphthalene (via USEPA SW 846-8270D – see notes)	-	70	ı	ı	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene (via USEPA SW 846-8260B – see notes)	2	ı	I	ı	ı	<5	<5	<5	<5	<5	<5
Acenaphthylene	-	I	ı	I	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	-	ı	ı	ı	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	-	I	ı	I	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	-	N	ı	ı	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	-	9.0	ı	1	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	-	4.1	1	1	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	-	1	1	1	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	-	ı	I	ı	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	-	I	ı	I	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	-	I	ı	I	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	-	I	ı	I	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	0.5	0.2	0.01	0.2	ı	<0.5	<0.5	<0.5	<0.5	<0.5	9.0>
Indeno(1.2.3.cd)pyrene	-	1	1	I	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	-	I	ı	I	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	-	ı	ı	ı	ı	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sum of PAH	0.5	1	1	I	ı	-	<1.0		-		<1.1
Monocyclic Aromatic Hydrocarbons											
Styrene	2	1	30		2,000	\$	<5	<5	<5	\$	^
1.2.4-Trimethylbenzene	2	ı	I	ı	ı	<5	<5	<5	<5	<5	<5
втех											
Benzene	-	200	-	1	1,000	₹	5	^	^	₹	٨
Toluene	2	180	800	-	2,000	<2	<2	<2	<2	<2	<2
Ethylbenzene	2	2	300		2,000	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	2	1	I		ı	<2	<2	<2	<2	<2	<2
ortho-Xylene	2	1	I			<2	<2	<2	<2	<2	<2
Total Xylenes	7	1	009	20 ^{b#}	2,000	<2	^	^	^5	<2	<2
Sum of BTEX	-	1	ı	1	ı	^	5	^	<u>^</u>	^	

TABLE 16 ORGANIC GROUNDWATER RESULTS SUMMARY - NORTH WEST WELLS (CONTINUED)

		-	Guidelines	sət		GW6	GW32	GW33	GW34	GW35	GW36
Analyte	LOR	Ecosystem ^a	Health	Recreation ^c	Trade waste ^d	18/04/11	19/04/11	18/04/11	18/04/11	18/04/11	20/04/11
Total Petroleum Hydrocarbons (TPH)											
TPH C ₆ - C ₉ Fraction	20	150*	150*	ı	1,000	<20	<20	<20	<20	<20	<20
TPH C ₁₀ - C ₁₄ Fraction	50	ı	ı	ı	1	<50	<50	<50	<50	<50	<50
TPH C ₁₅ - C ₂₈ Fraction	100	1	ı	1	ı	<100	<100	<100	<100	280	<100
TPH C ₂₉ - C ₃₆ Fraction	20	ı	ı	ı	ı	<50	<50	<50	<50	<50	<50
TPH C ₁₀ - C ₃₆ Fraction (sum)	20	*009	*009	ı	ı	<50	<50	<50	<50	280	<50
Total Recoverable Hydrocarbons (TRH)											
TRH C ₆ – C ₁₀ Fraction	20	ı	ı	ı	1	<20	<20	<20	<20	<20	<20
TRH C ₆ – C ₁₀ Fraction minus BTEX	20	ı	ı	ı	ı	<20	<20	<20	<20	<20	<20
>TRH C ₁₀ – C ₁₆ Fraction	100	1	I	I	I	<100	<100	<100	<100	<100	<100
>TRH C ₁₆ – C ₃₄ Fraction	100	1	I	I	I	<100	<100	<100	<100	240	<100
>TPH C ₃₄ – C ₄₀ Fraction	100	1	ı	1	ı	<100	<100	<100	<100	<100	<100
>TPH C ₁₀ – C ₄₀ Fraction (sum)	100	1	ı	1	ı	<100	<100	<100	<100	240	<100
TPH Speciation											
TPH Aromatic C ₁₀ -C ₁₄ Fraction	20	1	ı	1	1	-	I	1	1	1	I
TPH Aromatic C ₁₅ -C ₂₈ Fraction	100	ı	ı	ı	1	ı	I	ı	ı	ı	I
TPH Aromatic C ₂₉ -C ₃₆ Fraction	20	1	ı		1	-	I	1	1	1	1
TPH Aliphatic C ₁₀ -C ₁₄ Fraction	20	I	I	I	ı	I	I	I	I	I	I
TPH Aliphatic C ₁₅ -C ₂₈ Fraction	100	1	ı	1	ı	1	I	ı	ı	l	I
TPH Aliphatic C ₂₉ -C ₃₆ Fraction	20	1	1	ı	ı	I	I	1	ı	I	I
TPH - Silica gel cleanup											
TPH C ₁₀ - C ₁₄ Fraction	20	ı	ı	ı	ı	I	I	I	I	<100	I
TPH C ₁₅ - C ₂₈ Fraction	100	ı	ı	ı	ı	I	I	I	I	<200	I
TPH C ₂₉ - C ₃₆ Fraction	20	1	I		ı	-	1	I	I	<100	I
TPH C ₁₀ - C ₃₆ Fraction (sum)	20	*009	*009		1	-	I	-	-	<100	1
Total Recoverable Hydrocarbons (TRH) - Silica Gel Cleanup											
>TPH C ₁₀ - C ₁₆ Fraction	100	I	ı	ı	ı	I	I	I	I	<200	I
>TPH C ₁₆ – C ₃₄ Fraction	100	1	I		ı	-	1	I	I	<200	I
>TPH C ₃₄ – C ₄₀ Fraction	100	ı	ı	1	1	I	I	ı	I	<200	I
>TPH C ₁₀ – C ₄₀ Fraction (sum)	100	ı	ı	1	1	I	I	ı	I	<200	I

All results reported in µg/L.
LOR allocatory limits.
LOR allocatory limits.

LOR allocatory limits.

Sinade a resourts in direporting.

Sinade a resourts in excess of coosystem guidelines, highlighted = results in excess of health guidelines, italics = in excess of recreation guidelines, and boxed= in excess of coosystem guidelines.

** a guidelines taken from ANZECC/ARMCANZ (2000) Australian and New Zeeland guidelines for fresh and marine water quality (ecosystem criteria are for protection of 95 % of marine water species trigger levels);

be guideline taken from NHMRC and ARMCANZ (2004, 2011) Australian drinking water guidelines for health; # indicates aesthetic criteria aedopted from NHMRC and ARMCANZ (2004, 2011).

= recreated recreated and rinking water health (not aesthetic) guidelines x 201 to allow for to a low for to the waste discharge to the sewer system.

= augulenies and entyplenzene values taken from low reliability values for marine accosystems presented in Table 8.3.14 of ANZECC (2000); * = guidelines taken from Netherlands (1994) intervention values.

^{— =} guideline not available or analysis not undertaken.
USEPA SW 846-8270D = sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3).
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).

2,0

TABLE 17 ORGANIC GROUNDWATER RESULTS SUMMARY – NORTH EAST WELLS

		В	Guidelines		GW7	GW8	GW26	GW27	GW28	GW29	GW30	GW37	GW38	DUP2	SPLIT2
Analyte	LOR Ecosystem ^a	a Health ^b	Recreation ^c	Trade waste ^d	2/05/11	19/04/11	2/05/11	20/04/11	19/04/11	18/04/11	19/04/11	19/04/11	19/04/11	19/04/11	19/04/11
Oxygenated Compounds															
2-Butanone (MEK)	50 —	ı	I	1	<50	<50	<50	<50	<50	<50	<50	<50	<50	ı	1
Polynuclear Aromatic Hydrocarbons (PAH)															
Naphthalene (via USEPA SW 846-8270D - see notes)	1 70	I	I	1	9.1	14.2	<1.0	<1.0	<1.0	<1.0	<1.0	27.8	20.6	V	<0.2
Naphthalene (via USEPA SW 846-8260B - see notes)	2	I	1	1	<5	18	<5	<5	<5	<5	<5	40	28	٧	<0.2
Acenaphthylene	-	I	1	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	V	<0.2
Acenaphthene	-	I	I	1	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.7	<1.0	₹	<0.2
Fluorene	-	I	ı	I	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	٧	<0.2
Phenanthrene	L Z	I	ı	I	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	٧	<0.2
Anthracene	1 0.4	ı	1	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<u>^</u>	<0.2
Fluoranthene	1.4	I	ı	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	V	<0.2
Pyrene	-	I	I	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	V	<0.2
Benz(a)anthracene	-	I	1	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	V	<0.2
Chrysene	-	I	1	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	V	<0.2
Benzo(b)fluoranthene	-	I	ı	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	٧	<0.2
Benzo(k)fluoranthene	-	I	I	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	₹	<0.2
Benzo(a)pyrene	0.5 0.2	0.01	0.2	I	<0.5	<0.5	<0.5	9.0>	<0.5	<0.5	<0.5	9.0>	<0.5	<0.5	<0.2
Indeno(1.2.3.cd)pyrene	-	I	1	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	٧	<0.2
Dibenz(a.h)anthracene	-	I	1	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	V	<0.2
Benzo(g.h.i)perylene	-	I	ı	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	٧	<0.2
Sum of PAH	0.5	I	ı	I	13.6	14.2	<1.0	×1.1	<1.0	<1.0	<1.0	33.5	20.6	٧	<2
Monocyclic Aromatic Hydrocarbons															
Styrene		30	ı	2,000	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<0.5
1.2.4-Trimethylbenzene	- 2	ı	ı	1	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<0.5
втех															
Benzene	1 700	_	1	1,000	^	13	^	^	^	^	^	42	27	۲ ۲	<0.5
Toluene	2 180	800	1	2,000	<2	4	<2	<2	<2	<2	<2	12	10	<2	<0.5
Ethylbenzene	2	300	I	2,000	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.5
meta- & para-Xylene	2 —	I	ı	I	<2	2	<2	<2	<2	<2	<2	2	4	<2	<u>۷</u>
ortho-Xylene	2 —	1	1	ı	<2	2	<2	<2	<2	<2	<2	3	3	<2	<0.5
Total Xylenes	2	009	20 ^{b#}	2,000	~	4	~	~	~	<2	~	80	7	%	<1.5
Sum of BTEX	-	I	I	1	₹	21	٧	<u>^</u>	<u>^</u>	۲	<u>^</u>	62	44	<0.001	

TABLE 17 ORGANIC GROUNDWATER RESULTS SUMMARY - NORTH EAST WELLS (CONTINUED)

Analysis	0		Guid	Guidelines		GW7	GW8	GW26	GW27	GW28	GW29	GW30	GW37	GW38	DUP2	SPLIT2
	Š	Ecosystem ^a	Health	Recreation ^c	Trade waste ^d	2/05/11	19/04/11	2/05/11	20/04/11	19/04/11	18/04/11	19/04/11	19/04/2011	19/04/11	19/04/11	19/04/11
Total Petroleum Hydrocarbons (TPH)																
TPH C ₆ - C ₉ Fraction	20	150*	150*	-	1,000	<20	20	<20	<20	<20	<20	<20	09	40	<20	<20
TPH C ₁₀ - C ₁₄ Fraction	20	ı	1	I	1	<50	510	<50	<50	<50	<50	<50	610	3370	<50	<50
TPH C ₁₅ - C ₂₈ Fraction	100	ı	ı	ı	ı	220	1,110	170	280	<100	<100	<100	1330	1850	<100	260
TPH C ₂₉ - C ₃₆ Fraction	20	ı	ı	I	ı	09	06	80	190	<50	<50	<50	09	130	<50	<50
TPH C ₁₀ - C ₃₆ Fraction (sum)	20	*009	*009	I	ı	280	1,710	250	470	<50	<50	<50	2,000	5,350	<50	310
Total Recoverable Hydrocarbons (TRH)	(H)															
TRH C ₆ – C ₁₀ Fraction	20	ı	1	ı	ı	<20	20	<20	<20	<20	<20	<20	09	40	<0.02	ı
TRH C ₆ – C ₁₀ Fraction minus BTEX	20	ı	ı	ı	ı	<20	<20	<20	<20	<20	<20	<20	<20	<20	<0.02	ı
>TRH C ₁₀ – C ₁₆ Fraction	100	ı	ı	I	ı	<100	089	<100	<100	<100	<100	<100	880	3590	<0.1	ı
>TRH C ₁₆ – C ₃₄ Fraction	100	ı	1	ı	ı	230	086	210	380	<100	<100	<100	1110	1580	<0.1	ı
>TPH C ₃₄ – C ₄₀ Fraction	100	ı	ı	ı	ı	<100	<100	<100	100	<100	<100	<100	<100	<100	<0.1	ı
>TPH C ₁₀ - C ₄₀ Fraction (sum)	100	ı	ı	ı	ı	230	1660	210	480	<100	<100	<100	1990	5170	<100	ı
TPH Speciation																
TPH Aromatic C ₁₀ -C ₁₄ Fraction	20	ı	ı	I	ı	ı	<50	I	<50	I	ı	I	300	480	I	I
TPH Aromatic C ₁₅ -C ₂₈ Fraction	100	ı	ı		1	ı	<100	ı	<100	ı	1	1	<100	200	1	ı
TPH Aromatic C ₂₉ -C ₃₆ Fraction	20	ı	ı	I	1	ı	<50	ı	<50	I	1	ı	<50	<50	I	I
TPH Aliphatic C ₁₀ -C ₁₄ Fraction	20	ı	ı	I	ı	I	<50	I	<50	ı	ı	I	<50	<50	I	I
TPH Aliphatic C ₁₅ -C ₂₈ Fraction	100	ı	ı	I	1	I	<100	I	<100	ı	ı	I	<100	<100	1	I
TPH Aliphatic C ₂₉ -C ₃₆ Fraction	20	ı	ı		ı	ı	<50	I	<50	ı	ı	I	<50	<50	I	I
TPH - Silica gel cleanup																
TPH C ₁₀ - C ₁₄ Fraction	20	ı	ı	I	ı	ı	160	I	<50	ı	ı	I	410	1090	I	I
TPH C ₁₅ - C ₂₈ Fraction	100	I	I		1	I	<100	I	<100	I	ı	I	120	210	I	I
TPH C ₂₉ - C ₃₆ Fraction	20	ı	ı	l	ı	I	<50	I	<50	I	ı	I	<50	<50	I	I
TPH C ₁₀ - C ₃₆ Fraction (sum)	20	*009	*009		ı	ı	160	I	<50	ı	ı	I	530	1,300	I	I
Total Recoverable Hydrocarbons (TRH) - Silica Gel Cleanup	RH) – Sili	ca Gel Cleanup														
>TPH C ₁₀ - C ₁₆ Fraction	100	ı	ı	I	1	I	200	I	<100	ı	ı	I	440	1090	1	I
>TPH C ₁₆ – C ₃₄ Fraction	100	ı	ı	I	1	1	<100	1	<100	I	1	1	<100	170	1	ı
>TPH G ₃₄ – G ₄₀ Fraction	100	ı	ı	I	1	1	<100	1	<100	I	1	1	<100	<100	1	ı
>TPH C ₁₀ – C ₄₀ Fraction (sum)	100	1	ı	I	ı	ı	200	I	<100	I	ı	I	440	1260	I	1

All results reported in µg/L.

CDR = laboratory limit of reporting.

Shaded = results in excess of ecceystem guidelines, highlighted = results in excess of health guidelines, italics = in excess of recreation guidelines, and boxed= in excess of trade waste guidelines.

Shaded = results in excess of ecceystem guidelines, highlighted = results in excess of ecceystem guidelines.

Buidelines taken from ANZECC/ARMCANZ (2000) Australian and New Zealand guidelines for fresh and marine water quality (ecceystem criteria are for protection of 95 % of marine water species trigger levels);

b = guideline taken from NHMRC and ARMCANZ (2004, 2011) Australian drinking water guidelines for health; # indicates aesthetic criteria adopted from NHMRC and ARMCANZ (2004, 2011).

= guideline taken from city West water health (not aesthetic) guidelines x 20 to allow (Aga consumption of drinking water and 100 mL incidental consumption per recreational swimming session.

= guidelines taken from City West water (2011) Standards for tradete waste discharge to the sewer system.

= studielines taken from City West water (2014) Standards for marine ecosystems presented in Table 8.3.14 of ANZECC (2000); * =guidelines taken from Netherlands (1994) intervention values.

= guideline and ethylbenzene values taken from low reliability values for marine ecosystems presented in Table 8.3.14 of ANZECC (2000); * =guidelines taken from Netherlands (1999) Schedule B(3).

= guideline not available or manysis not undertaken.

= guideline not available or manysis not undertaken water sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compilant with NEPM (1999) Schedule B(3).

USEPA SW 846-8220B = 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 compilant with NEPM (1999) Schedule B(3).

T-23

TABLE 18 ORGANIC GROUNDWATER RESULTS SUMMARY – SOUTH EAST WELLS

Analyte	0		์ อี	Guidelines		GW9	GW10	GW11	GW12	GW13	GW14	GW15	GW16	GW25
Alialyte	Š	Ecosystem ^a	Health	Recreation ^c	Trade waste ^d	19/04/11	20/04/11	20/04/11	19/04/11	20/04/11	20/04/11	20/04/11	20/04/11	20/04/11
Oxygenated Compounds														
2-Butanone (MEK)	20	ı	ı	ı	ı	<50	<50	<50	<50	<50	<50	<50	<50	<50
Polynuclear Aromatic Hydrocarbons (PAH)														
Naphthalene (via USEPA SW 846-8270D – see notes)	-	20	ı	ı	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene (via USEPA SW 846-8260B - see notes)	2	1	I	ı	1	<5	<5	<5	[^] 5	<5	<5	<5	~ 2	9
Acenaphthylene	-	ı	I	ı	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	-	ı	ı	ı	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	-	ı	ı	ı	ı	<1.0	0.1>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	-	N	ı	ı	ı	<1.0	0.1>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	-	0.4	I	ı	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	-	4.1	ı	ı	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	-	ı	ı	ı	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	-	ı	ı	ı	ı	<1.0	0.1>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	-	ı	I	ı	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	-	ı	1	ı	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	-	ı	I	ı	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	0.5	0.2	0.01	0.01	I	9.0>	9.0>	9.0>	<0.5	<0.5	9.0>	9.0>	9.0>	9.0>
Indeno(1.2.3.cd)pyrene	-	I	I	ı	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	-	ı	I	ı	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	-	ı	ı	ı	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sum of PAH	0.5	ı	ı	ı	1	1.1	1.1>	1.1	<u>^</u>	1.1	1.1>	1.1>	1.1	<1.2
Monocyclic Aromatic Hydrocarbons														
Styrene	5	ı	30	ı	2,000	<5	<5	<5	<5	<5	<5	<5	<5	<5
1.2.4-Trimethylbenzene	2	1	I	-	_	<5	<5	<5	<5	<5	<5	<5	<5	<5
ВТЕХ														
Benzene	-	200	-	1	1,000	<u>^</u>	<u>۲</u>	<u>^</u>	<u>^</u>	<u>^</u>	^	<u>^</u>	<u>^</u>	<u>۲</u>
Toluene	2	180	800	ı	2,000	<2	<2	<2	<2	<2	<2	<2	<2	~
Ethylbenzene	2	2	300		2,000	<2	<2	<2	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	2	ı	1	1	-	<2	<2	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	2	1	1	1	_	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	2	ı	009	20 ^{b#}	2,000	4	~	<2	<2	~	<2	<2	<2	^
Sum of BTEX	-	1	1	1		^	^	^	, 1	^	^	^	^	^

TABLE 18 ORGANIC GROUNDWATER RESULTS SUMMARY – SOUTH EAST WELLS (CONTINUED)

Analyte	0		Guic	Guidelines		GW9	GW10	GW11	GW12	GW13	GW14	GW15	GW16	GW25
	Í	Ecosystem ^a	Health	Recreation ^c	Trade waste ^d	19/04/11	20/04/11	20/04/11	19/04/11	20/04/11	20/04/11	20/04/11	20/04/11	20/04/11
Total Petroleum Hydrocarbons (TPH)														
TPH C ₆ - C ₉ Fraction	20	150*	150*	1	1,000	<20	<20	<20	<20	<20	<20	<20	<20	<20
TPH C ₁₀ - C ₁₄ Fraction	20	I	ı	I	1	<50	<50	<50	<50	<50	<50	<50	<50	<50
TPH C ₁₅ - C ₂₈ Fraction	100	1	ı	ı	1	<100	<100	510	<100	<100	<100	230	<100	120
TPH C ₂₉ - C ₃₆ Fraction	90	ı	ı	1	1	<50	09	260	90	<50	<50	<50	<50	70
TPH C ₁₀ - C ₃₆ Fraction (sum)	90	*009	*009	1	1	<50	09	770	20	<50	<50	230	<50	190
Total Recoverable Hydrocarbons (TRH)														
TRH C ₆ – C ₁₀ Fraction	20	1	ı	ı	1	<20	<20	<20	<20	<20	<20	<20	<20	<20
TRH C ₆ – C ₁₀ Fraction minus BTEX	20	1	I	1	1	<20	<20	<20	<20	<20	<20	<20	<20	<20
>TRH C ₁₀ – C ₁₆ Fraction	100	I	ı	1	1	<100	<100	<100	<100	<100	<100	<100	<100	<100
>TRH C ₁₆ – C ₃₄ Fraction	100	1	ı	1	1	<100	130	029	<100	<100	<100	250	<100	160
>TPH C ₃₄ – C ₄₀ Fraction	100	1	ı	1	1	<100	<100	120	<100	<100	<100	<100	<100	<100
>TPH C ₁₀ – C ₄₀ Fraction (sum)	100	1	ı	ı	1	<100	130	790	<100	<100	<100	250	<100	160
TPH Speciation														
TPH Aromatic C ₁₀ -C ₁₄ Fraction	90	I	ı	ı	1	I	<50	<50	I	I	I	<50	I	<50
TPH Aromatic C ₁₅ -C ₂₈ Fraction	100	-	I	-	1	I	<100	<100	I	I	I	<100	1	<100
TPH Aromatic C ₂₉ -C ₃₆ Fraction	90	1	ı	ı	1	ı	<50	<50	I	I	I	<50	ı	<50
TPH Aliphatic C ₁₀ -C ₁₄ Fraction	90	1	1	1	1	ı	<50	<50	I	1	1	<50	ı	<50
TPH Aliphatic C ₁₅ -C ₂₈ Fraction	100	ı	ı	I	1	ı	<100	<100	I	ı	I	<100	ı	<100
TPH Aliphatic C ₂₉ -C ₃₆ Fraction	90	I	I	I	ı	I	<50	<50	I	I	I	<50	I	<50
TPH - Silica gel cleanup														
TPH C ₁₀ - C ₁₄ Fraction	20	ı	ı	1	1	I	<50	<50	ı	ı	ı	<50		<50
TPH C ₁₅ - C ₂₈ Fraction	100		I	-	1	I	<100	<100	I	I	ı	140	I	<100
TPH C ₂₉ - C ₃₆ Fraction	90	I	I	I	ı	I	<50	<50	I	I	I	<50	I	<50
TPH C ₁₀ - C ₃₆ Fraction (sum)	90	*009	*009	I	I	ı	<50	<50	I	I	I	140	I	<50
Total Recoverable Hydrocarbons (TRH) - Silica Gel Cleanup														
>TPH C ₁₀ - C ₁₆ Fraction	100	l	I	1	1	ı	<100	<100	I	I	I	<100	I	<100
>TPH C ₁₆ – C ₃₄ Fraction	100	l	I	1	1	ı	<100	<100	I	I	I	140	I	<100
>TPH C ₃₄ – C ₄₀ Fraction	100	-	I	-	1	I	<100	<100	I	I	I	<100	1	<100
>TPH C ₁₀ – C ₄₀ Fraction (sum)	100	1	ı	1	1	ı	<100	<100	I	ı	I	140	ı	<100

All results reported in µg/l.
LOR almostroy limit of reporting.

LOR almostroy limit of reporting.

Standed = trebults in excess of eccesses of trade waste guidelines. in excess of recreation guidelines, and boxed= in excess of eccesses of trade waste guidelines.

** a guidelines taken from ANZECC/ARM/CANZ (2000) Australian and New Zealand guidelines for fresh and marine water quality (ecosystem criteria are for protection of 95 % of marine water species trigger levels);



APPENDIX A GEOLOGICAL LOGS AND WELL CONSTRUCTION DETAILS



LOCATION X: Y:		Borehole Log: GW37	Logged by SM
SURFACE ELEVATION	JOB NUMBER 210074		
GROUNDWATER 8 mBGL	DATUM	PROJECT: Sth Melbourne Gasworks	Proj. Manager DJ
DRILL METHOD Solid Auger	DATE DRILLED 1 March 2011		

			S	ΑM	IPL	ES		PID	/FID	р	Н		
STRATIGRAPHY	GRAPHIC LOG	Depth metres	Depth	Tvpe	Lost	Duplicate	Moisture Content	Background	Reading	pH - soil	pH - water	Construction Details	Comments
Ground Surface				Τ									
FILL Firm light grey /brown sandy CLAY NATURAL Yellow and grey fine grained SAND (Brighton Group Sediment)		1					M1						No odour Moisture encountered, possible pipe leakage
Yellow/grey sandy CLAY with medium plasticity		2					M1						Cement 50 mm ID PVC casing, 125 mm hole
White-yellow, fine grained sandy CLAY with medium plasticity		1 2 3 4 5 6					D						
Fine gray CLAY with some yellow mottles,		6					M1						Bentonite
medium-high plasticity with minor sand lenses		7					M1						Moisture encountered at 6.5 mBGL Sand Strong hydrocarbon odour
		- - 8 - - - - - - -					w						Screen - 50 mm ID PVC
Black/blue, medium coarse SAND with some clay		10					VV						ЕОН @ 11.0 mBGL
		— 11 — — — 12] -] - 	LOTT W TT.O HIDGE



LOCATION X: Y:		Borehole Log: GW38	Logged by SF
SURFACE ELEVATION	JOB NUMBER 210074		
GROUNDWATER	DATUM	PROJECT: Sth Melbourne Gasworks	Proj. Manager DJ
DRILL METHOD Solid Auger	DATE DRILLED 28/2/11		

			S	ΔM	PLE	ES	Ţ	PII)/FID	p	Н		
STRATIGRAPHY	GRAPHIC LOG	Depth metres	Depth	Type	Lost	Duplicate	Moisture Content	Background	Reading	pH - soil	pH - water	Construction Details	Comments
Ground Surface													
FILL Gasworks waste		1										XVIIVAXVIIX XVVIIVAXVIIX	
NATURAL Gray, stiff, CLAY, high plasticity with minor sand lenses and minor orange mottling		2					D					NI DANI DANI	
Increased mottling		3					DM	1					cement. 50 mm ID PVC casing, 125mm h
		5					DM	1					Bentonite
Dark grey, fine SAND with minor clay		5					M						Sand. Screen - 50 mm ID PVC
Some black staining		9	3										Odour
		1											EOH @ 10 mBGL



ĺ	LOCATION X: Y:		Borehole Log: GW39	Logged by SM
ĺ	SURFACE ELEVATION	JOB NUMBER 210074		
ĺ	GROUNDWATER 8 mBGL	DATUM	PROJECT: Sth Melbourne Gasworks	Proj. Manager DJ
	DRILL METHOD Solid Auger	DATE DRILLED 1 March 2011		

			SA	MI	PLE	S	,.	PID	/FID	р	Н		
STRATIGRAPHY	GRAPHIC LOG	Depth metres	Depth	Туре	Lost	Duplicate	Moisture Content	Background	Reading	lios - Hd	pH - water	Construction Details	Comments
Ground Surface													
FILL Firm dark brown, loose clayey SILT with brick fragments Red yellow, CLAY of low plasticity Dark brown, loose clayey SILT NATURAL Yellow gray, medium coarse SAND with clay lenses Blue-gray, medium coarse SAND with some clay lenses Light brown, medium-coarse grained clayey SAND		1 2 3 4 5 6 6 7 7 8					D D						No odour detected through out stratigraphy Cement. 50 mm ID PVC casing, 125mm Bentonite A layer of small rocks Some moisture Sand
Light brown, medium-high plasticity, CLAYwith some sand lenses Black, medium dense SAND with clay lenses		9					W						Screen - 50 mm ID PVC No odour EOH @ 11.5 mBGL



LOCATION X: Y:		Borehole Log: GW40	Logged by SM
SURFACE ELEVATION	JOB NUMBER 210074		
GROUNDWATER 8 mBGL	DATUM	PROJECT: Sth Melbourne Gasworks	Proj. Manager DJ
DRILL METHOD Solid Auger	DATE DRILLED 28 February 2011		

			SA	\MF	LE	s		PID	/FID	р	H		
STRATIGRAPHY	GRAPHIC LOG	Depth metres	Depth	Туре	Lost	Duplicate	Moisture Content	Background	Reading	lios - Hd	pH - water	Construction Details	Comments
Ground Surface		_0											
FILL Lilydale topping Firm, light brown, SAND with some sub angular		-					D D						No odour Slight hydrocarbon odour
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		_ _1											50 mm ID PVC casing, 125mm hole
NATURAL Brown, hard, SAND heavily cemented. Red, fine-medium grained SAND with minor fine gravel		3											Cement
		5 5											Bentonite
Valley fine are in a CAMP with review Clay		- - - - - - - - - - - - - - - - - - -					M1						Sand
Yellow, fine grained SAND with minor Clay inclusions							W						Screen - 50 mm ID PVC EOH @ 10.5 mBGL

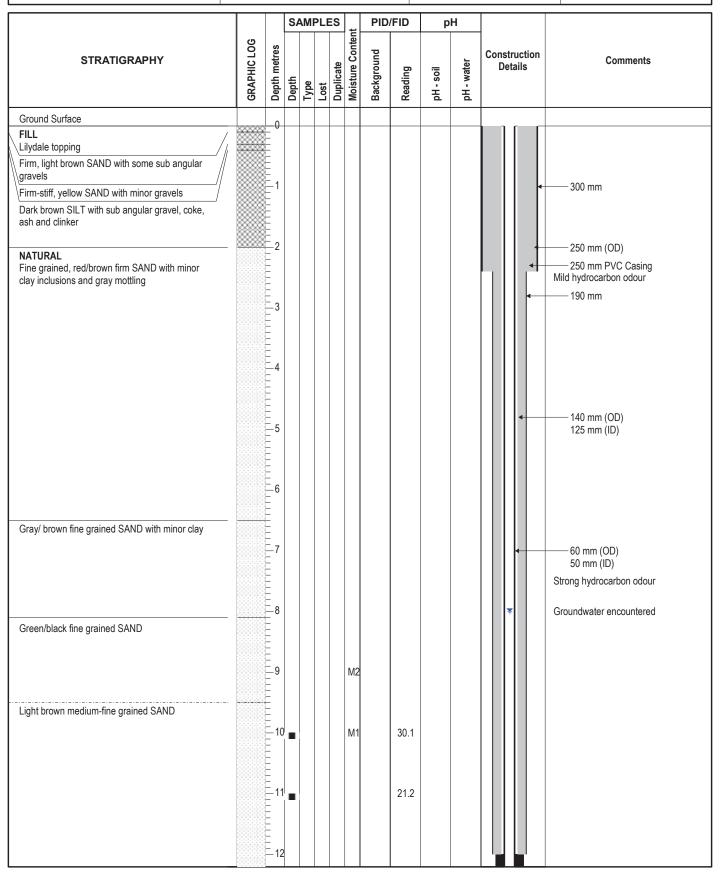


LOCATION X: Y:		Borehole Log: GW41	Logged by SM
SURFACE ELEVATION	JOB NUMBER 210074		
GROUNDWATER	DATUM	PROJECT: Sth Melbourne Gasworks	Proj. Manager DJ
DRILL METHOD Hollow Flight	DATE DRILLED 28/2/11		

		SAMPLES		.	PID	/FID	р	Н						
STRATIGRAPHY	GRAPHIC LOG	Depth metres	Depth	Туре	Lost	Duplicate	Moisture Content	Background	Reading	pH-soil	pH - water	Construction Details	Comments	
Ground Surface														
FILL Brown loose, SILT with coarse gravel Ligth brown loose sandy SILT, with coarse gravels, clinker and coke Grey/light brown, loose, silty SAND with gravels, bricks and yellow and grey clay nodules		— 	•				D D					X(U)/X(U)/	No odour, Hand augered to 0.6 mBGL No odour 50 mm ID PVC casing, 125 mm hole	
Black, loose, gasworks waste with large gravels, brick fragments (ballast and slag fragments 10-20mm) NATURAL		2 2 2										KKUTAKKUT.		
Gray, stiff, CLAY with trace orange mottling Tan/brown, fine SAND with minor clay		3					D						Grout	
		4					D							
Gray, clayey SAND, fine gravels (3mm)		5 5 					D						Bentonite	
Orange/brown, soft, clayey SAND		6 6 					M						Sand. Screen - 50 mm ID PVC	
		7					M						EOH @ 7.0 mBGL	



LOCATION X: Y:		Borehole Log: GW42D	Logged by DJ
SURFACE ELEVATION	JOB NUMBER 210074		
GROUNDWATER 8 mBGL	DATUM	PROJECT: Sth Melbourne Gasworks	Proj. Manager DJ/SF
DRILL METHOD Solid Auger / Mud Rotary	DATE DRILLED 3 March 2011		



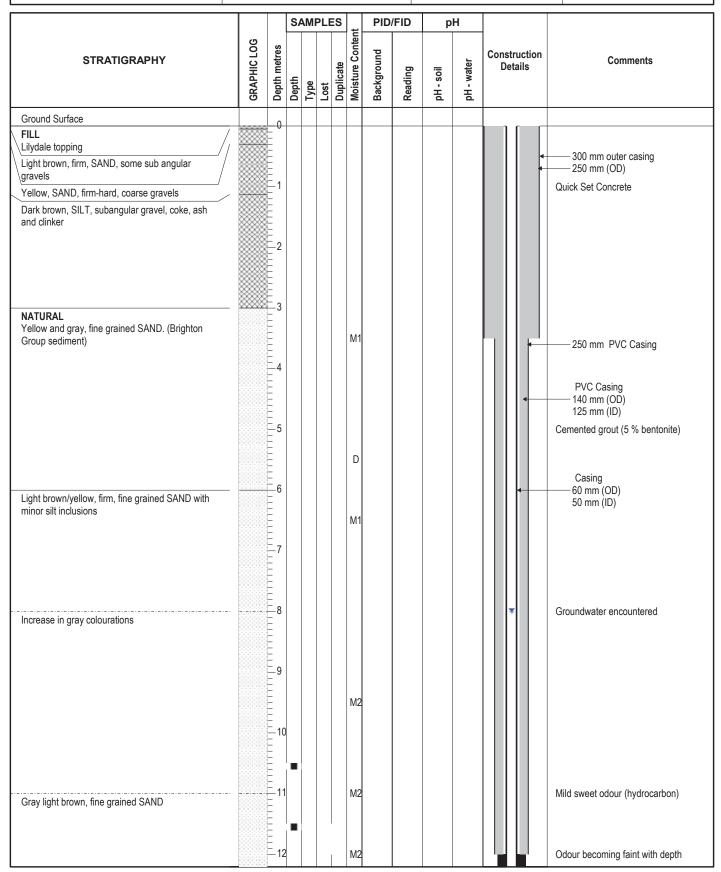


LOCATION X: Y:		Borehole Log: GW42D	Logged by DJ
SURFACE ELEVATION	JOB NUMBER 210074		
GROUNDWATER 8 mBGL	DATUM	PROJECT: Sth Melbourne Gasworks	Proj. Manager DJ/SF
DRILL METHOD Solid Auger / Mud Rotary	DATE DRILLED 3 March 2011		

			S	AMPLES PID/FID pH		Н							
STRATIGRAPHY	GRAPHIC LOG	Depth metres	Depth	Type	Lost	Duplicate	Moisture Content	Background	Reading	pH - soil	pH - water	Construction Details	Comments
	- Vo. 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	13	3										Bentonite No odour
Gray, firm, medium grained SAND, minor clay content			ō									•	Slotted 50 mm ID PVC screen 0.4 mm slots
Weathered CLAY, basalt chips	9 .00	- 10	•										Hydrocarbon odour EOH @ 17.0 mBGL
		18											
		20)										
		21											
		23	3										



LOCATION X: Y:		Borehole Log: GW43D	Logged by DJ
SURFACE ELEVATION	JOB NUMBER 210074		
GROUNDWATER 8 mBGL	DATUM	PROJECT: Sth Melbourne Gasworks	Proj. Manager DJ
DRILL METHOD Solid Auger / Mud Rotary	DATE DRILLED 4 March 2011		



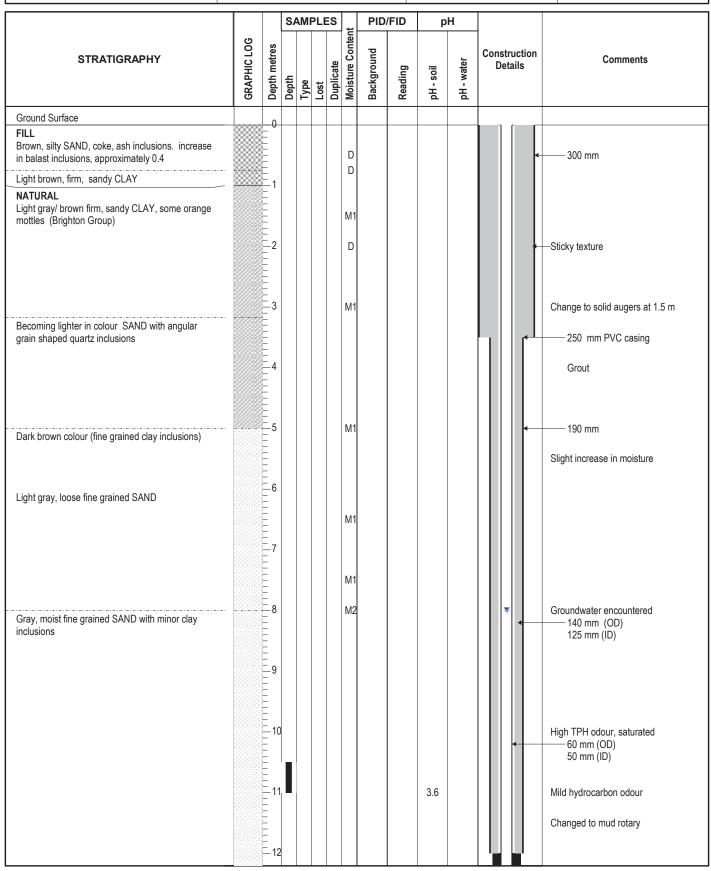


	LOCATION X: Y:		Borehole Log: GW43D	Logged by DJ
ĺ	SURFACE ELEVATION	JOB NUMBER 210074		
ĺ	GROUNDWATER 8 mBGL	DATUM	PROJECT: Sth Melbourne Gasworks	Proj. Manager DJ
	DRILL METHOD Solid Auger / Mud Rotary	DATE DRILLED 4 March 2011		

	SAMPLES PID/FID pH		Н										
STRATIGRAPHY	GRAPHIC LOG	Depth metres	Depth	Туре	Lost	Duplicate	Moisture Content	Background	Reading	pH - soil	pH - water	Construction Details	Comments
		13	3										Bentonite
		- 14 	1										No odour
		_ 15 15 	ō										Filter Pack (16/30)
Weathered CLAY with sand lenses	-	= 16 = 	ò										Slotted 50 mm ID PVC screen 0.4 mm slots
Basalt chips	- 1000		7										EOH @ 17.4 mBGL_
		- 19 - 19 - 19 - 19 - 19 - 19 - 19 - 19) 1										



LOCATION X: Y:		Borehole Log: GW44D	Logged by DJ
SURFACE ELEVATION	JOB NUMBER 210074		
GROUNDWATER	DATUM	PROJECT: Sth Melbourne Gasworks	Proj. Manager DJ
DRILL METHOD Soild Auger / Mud Rotary	DATE DRILLED		



Geological Borelog

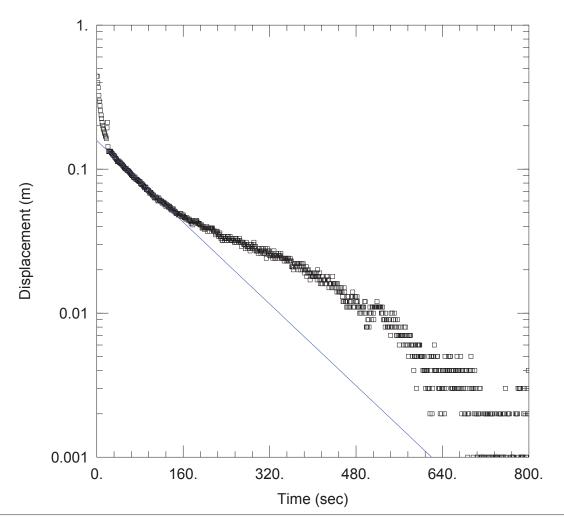


	LOCATION X: Y:		Borehole Log: GW44D	Logged by DJ
	SURFACE ELEVATION	JOB NUMBER 210074		
ı	GROUNDWATER	DATUM	PROJECT: Sth Melbourne Gasworks	Proj. Manager DJ
	DRILL METHOD Soild Auger / Mud Rotary	DATE DRILLED		

	Т		S	AM	PLI	ES		P	D/F	ID	р	Н		·
STRATIGRAPHY	GRAPHIC LOG	Depth metres	Depth	Туре	Lost	Duplicate	Moisture Content	Background)	Reading	pH - soil	pH - water	Construction Details	Comments
		13									2-1			Bentonite
		14 												Sand
Soft-firm, saturated gray CLAY with minor sand and minor orange mottling		15												Slotted 50 mm screen 0.4 mm slots
with 5% gravels. Gravels include basalt chips,		16	ò											Pressure build up in hole, mud coming out of the top. Augers were withdrawn and re inserted
appoximately 10mm angular.		17	7											Odours in cuttings distinctive
		18	3											EOH @ 18.0 mBGL
		19	9											
		20)											
		21 21												
		22	2											
			3											
		24	l											



APPENDIX B SLUG TEST ANALYSES



Data Set: N:\...\210074 - GW40 BR 'rising'.aqt

Date: 10/30/12 Time: <u>17:29:58</u>

PROJECT INFORMATION

Project: 210074 Test Well: GW40

AQUIFER DATA

Saturated Thickness: 2.82 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (GW40)

Initial Displacement: 0.442 m

Total Well Penetration Depth: 2.82 m

Casing Radius: 0.025 m

Static Water Column Height: 2.82 m

Screen Length: 2.82 m Well Radius: 0.025 m

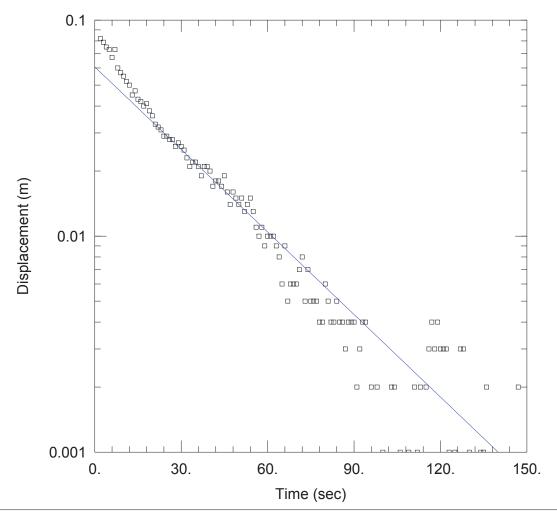
SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.2847 m/day

y0 = 0.1579 m



Data Set: N:\...\210074 gw30 BouwerRice 'Rising' AW.aqt

Date: 10/30/12 Time: <u>17:28:06</u>

PROJECT INFORMATION

Project: 210074 Test Well: GW30

AQUIFER DATA

Saturated Thickness: 1.5 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (GW30)

Initial Displacement: 1.5 m

Total Well Penetration Depth: 1.5 m

Casing Radius: 0.025 m

Static Water Column Height: 1.5 m

Screen Length: 1.5 m

Well Radius: 0.025 m

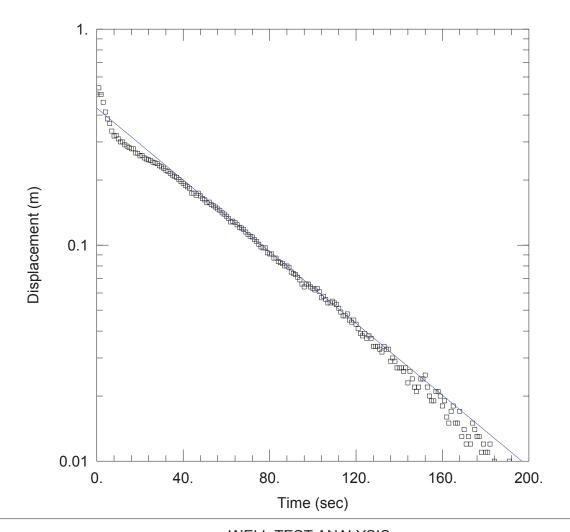
SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 1.658 m/day

y0 = 0.06071 m



Data Set: N:\...\210074 gw37 BouwerRice 'Rising' AW.aqt

Date: 10/30/12 Time: 17:29:26

PROJECT INFORMATION

Project: 210074 Test Well: GW37

AQUIFER DATA

Saturated Thickness: 2.81 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (GW37)

Initial Displacement: 0.5 m

.. <u>0.5</u> III

Total Well Penetration Depth: 2.81 m

Casing Radius: 0.025 m

Static Water Column Height: 2.81 m

Screen Length: 2.81 m Well Radius: 0.025 m

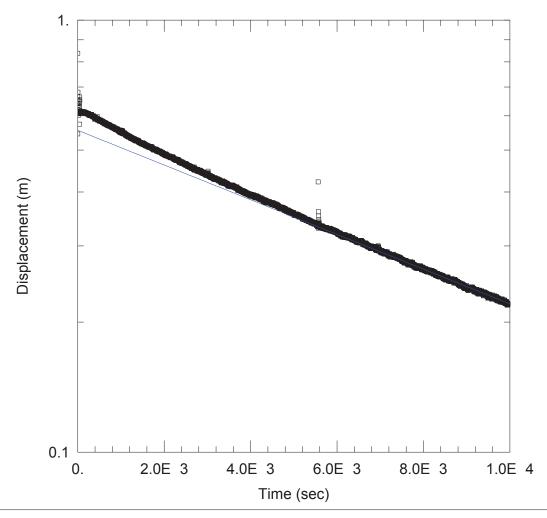
SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.6684 m/day

y0 = 0.4302 m



Data Set: N:\...\210074 GW42 BR 'falling' AW.aqt

Date: 10/30/12 Time: 17:30:23

PROJECT INFORMATION

Project: 210074 Test Well: GW42D

AQUIFER DATA

Saturated Thickness: 3. m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.62 m

D 11 400

Total Well Penetration Depth: 16.8 m

Casing Radius: 0.025 m

Static Water Column Height: 7.62 m

Screen Length: 3. m Well Radius: 0.025 m

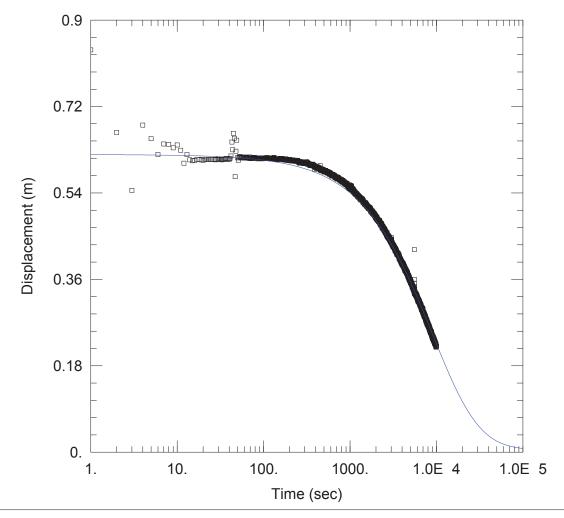
SOLUTION

Aquifer Model: Confined

K = 0.003962 m/day

Solution Method: Bouwer-Rice

y0 = 0.5556 m



Data Set: N:\...\210074 GW42 CBP 'falling' AW.aqt

Date: 10/30/12 Time: <u>17:30:4</u>7

PROJECT INFORMATION

Project: 210074 Test Well: GW42D

AQUIFER DATA

Saturated Thickness: 3. m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.62 m

Total Well Penetration Depth: 16.8 m

Static Water Column Height: 7.62 m

Screen Length: 3. m

Solution Method: Cooper-Bredehoeft-Papadopulos

Well Radius: 0.025 m

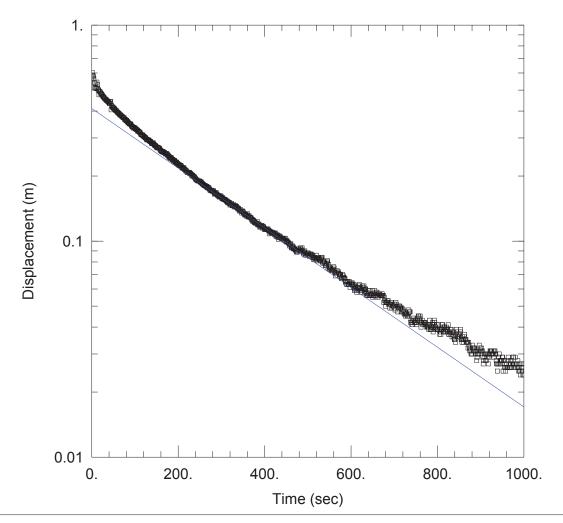
SOLUTION

Aquifer Model: Confined

Casing Radius: 0.025 m

 $T = 0.01464 \text{ m}^2/\text{day}$

S = 0.0001



Data Set: N:\...\210074 GW44 BR falling AW.aqt

Date: 10/30/12 Time: 17:31:29

PROJECT INFORMATION

Project: 210074 Test Well: GW44

AQUIFER DATA

Saturated Thickness: 4.2 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.57 m Static Water Column Height: 8.98 m

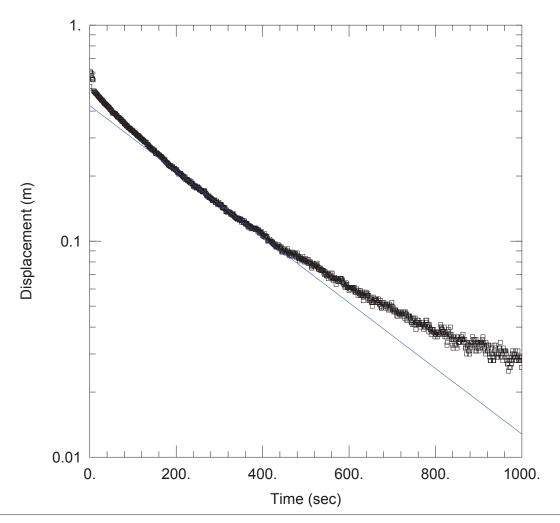
Total Well Penetration Depth: 10.18 m Screen Length: 4.2 m

Casing Radius: 0.025 m Well Radius: 0.025 m

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 0.09297 m/day y0 = 0.4109 m



Data Set: N:\...\210074 GW44 BR rising AW.aqt

Date: 10/30/12 Time: 17:31:49

PROJECT INFORMATION

Project: 210074 Test Well: GW44

AQUIFER DATA

Saturated Thickness: 4.2 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.52 m

Total Well Penetration Depth: 10.18 m

Casing Radius: 0.025 m

Static Water Column Height: 8.98 m

Screen Length: 4.2 m Well Radius: 0.025 m

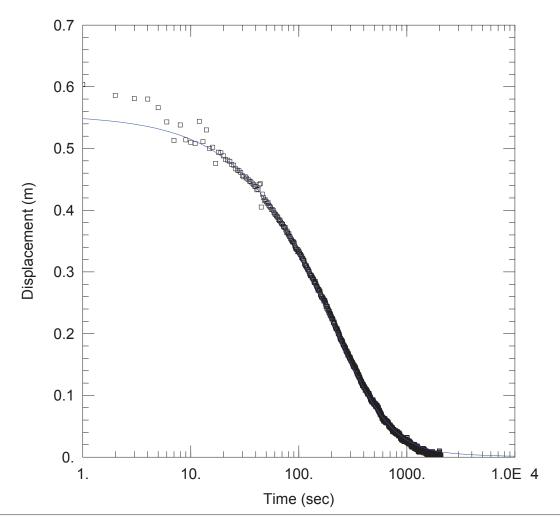
SOLUTION

Aquifer Model: Confined

Solution Method: Bouwer-Rice

K = 0.1023 m/day

y0 = 0.4234 m



Data Set: N:\...\210074 GW44 CBP falling AW.aqt

Date: 10/30/12 Time: 17:32:07

PROJECT INFORMATION

Project: 210074 Test Well: GW44

AQUIFER DATA

Saturated Thickness: 4.2 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.555 m

Total Well Penetration Depth: 10.18 m

Casing Radius: 0.025 m

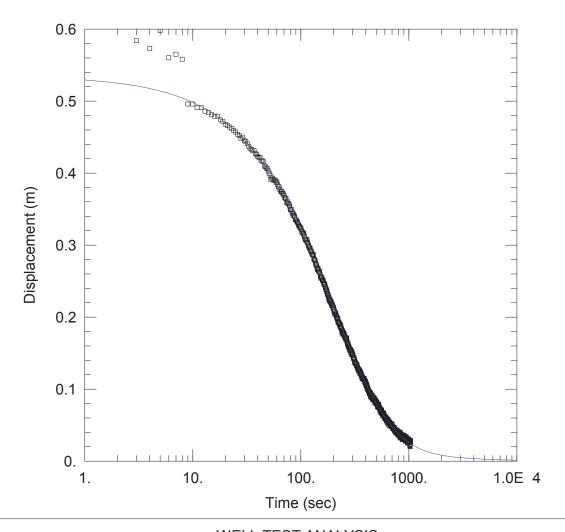
Static Water Column Height: 8.98 m

Screen Length: 4.2 m Well Radius: 0.025 m

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Bredehoeft-Papadopulos

 $T = 0.5659 \text{ m}^2/\text{day}$ S = 0.0004058



Data Set: N:\...\210074 GW44 CBP rising AW.aqt

Date: 10/30/12 Time: 17:32:25

PROJECT INFORMATION

Project: 210074 Test Well: GW44

AQUIFER DATA

Saturated Thickness: 4.2 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

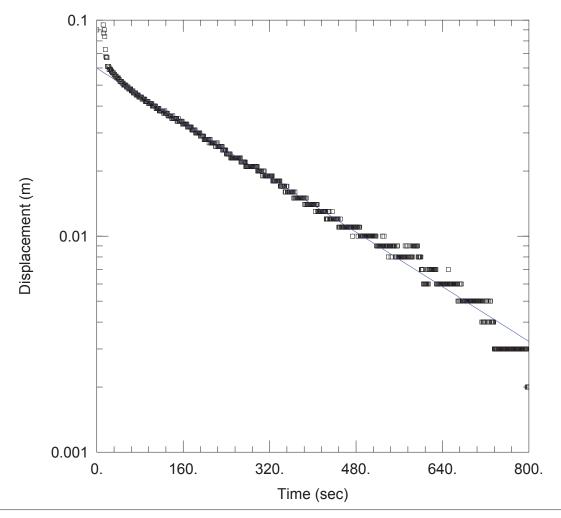
Initial Displacement: 0.535 m Static Water Column Height: 8.98 m

Total Well Penetration Depth: 10.18 m Screen Length: 4.2 m Casing Radius: 0.025 m Well Radius: 0.025 m

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Bredehoeft-Papadopulos

 $T = 0.6013 \text{ m}^2/\text{day}$ S = 0.0002188



Data Set: N:\...\210074 gw7 BouwerRice 'Rising' AW.aqt

Date: 10/30/12 Time: 17:27:23

PROJECT INFORMATION

Project: 210074 Test Well: GW7

AQUIFER DATA

Saturated Thickness: 2.5 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (GW7)

Initial Displacement: 0.09 m

Total Well Penetration Depth: 2.5 m

Casing Radius: 0.025 m

Static Water Column Height: 2.5 m

Screen Length: 2.5 m Well Radius: 0.025 m

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.1393 m/day

y0 = 0.05986 m



APPENDIX C LABORATORY TRANSCRIPTS AND CHAIN OF CUSTODY FORMS





Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: EM1104104	Page	: 1 of 13
Amendment	Σ.		
Client	ENVIRONMENTAL EARTH SCIENCES	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID JAMES	Contact	: Carol Walsh
Address	: P.O.BOX 2253	Address	: 4 Westall Rd Springvale VIC Australia 3171
	FOOTSCRAY VIC, AUSTRALIA 3011		
E-mail	: djames@eesi.biz	E-mail	: carol.walsh@alsenviro.com
Telephone	: +61 96871666	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 96871844	Facsimile	: +61-3-8549 9601
Project	: 210074 ALBERT PARK GAS WORKS	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number			
C-O-C number		Date Samples Received	: 18-APR-2011
Sampler		Issue Date	: 30-MAY-2011
Site	:		
		No. of samples received	L :
Quote number	: ME/015/11 V3	No. of samples analysed	2:

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825	Signatories							
	This document	has	peen	document has been electronically	y signed by the authorii	þ	the	authori
This document is issued in	carried out in compliance with	mpliand	e with proced	dures	specified in 21 CFR Part	21 C	FR P	art 11.

peen

signed by the authorized signatories indicated below. Electronic signing has

Melbourne Inorganics Melbourne Inorganics Melbourne Inorganics Melbourne Organics Melbourne Organics Accreditation Category Senior Semivolatile Instrument Chemist Senior Inorganic Chemist Senior Organic Chemist Laboratory Coordinator QC Officer Position Dilani Fernando Nancy Wang Herman Lin Valda Chen Xingbin Lin Signatories

Accredited for compliance with

ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

accreditation requirements.

This document is issued in accordance with NATA

Environmental Division Melbourne Part of the ALS Laboratory Group

4 Westall Rd Springvale VIC Australia 3171 Tel. +61-3-8549 9600 Fax. +61-3-8549 9601 www.alsglobal.com

A Campbell Brothers Limited Company



Vork Order : 2 of 13

Work Order : EM1104104 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 210074 ALBERT PARK GAS WORKS

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 insuffient sample for analysis.

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

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

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

LOR = Limit of reporting

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

- 30/5/11: This report has been amended and re-released to allow the reporting of additional analytical data.
 - EP075(SIM): Insufficient sample provided to confirm matrix spike analysis.
- lonic balances were calculated using: major anions chloride, alkalinity and sulfate; and major cations calcium, magnesium, potassium and sodium.



Project : 210074

Analytical Results

Work Order

Client

.

: 3 of 13 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

		S	_ Ol olumes tuoil	7,810	POMO	COMPO		TOW O
Sub-iviatrix: WAIEK		5	all sample ID	LM5	GW31	GW33	GW34	GW35
	Clie	ent samplir	Client sampling date / time	18-APR-2011 15:00				
Compound	CAS Number	LOR	Unit	EM1104104-001	EM1104104-002	EM1104104-003	EM1104104-004	EM1104104-005
EA005: pH								
pH Value		0.01	pH Unit	7.17	7.06	7.39	7.52	7.18
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	GIS-210-010	2	mg/L	2780	1440	3480	3010	6450
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	_	mg/L	^	۲	^		₹
Carbonate Alkalinity as CaCO3	3812-32-6	_	mg/L	^	\	^		.
Bicarbonate Alkalinity as CaCO3	71-52-3	_	mg/L	584	242	314	45	532
Total Alkalinity as CaCO3		-	mg/L	584	242	314	45	532
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	- by DA							
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	120	227	1930	1440	503
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	1040	550	1050	243	3400
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	_	mg/L	196	42	379	30	86
Magnesium	7439-95-4	1	mg/L	210	51	383	54	205
Sodium	7440-23-5	_	mg/L	400	454	672	922	2490
Potassium	7440-09-7	1	mg/L	53	49	168	42	43
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.04	<0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L	0.051	0.272	0.010	0.396	0.286
Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	7440-48-4	0.001	mg/L	0.002	<0.001	0.005	0.002	0.002
Copper	7440-50-8	0.001	mg/L	0.005	0.002	0.006	0.003	0.002
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.197	0.083	0.320	0.021	0.792
Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.006	0.003	0.007
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	0.024	0.016	0.012	<0.005	0.014
Boron	7440-42-8	0.05	mg/L	1.30	2.65	3.38	6.88	1.39
Iron	7439-89-6	0.05	mg/L	<0.05	90:0	<0.05	0.10	0.09

A Campbell Brothers Limited Company

<0.004

0.005

<0.004

<0.004

0.012

mg/L

--- 0.004

EK026G: Total Cyanide By Discrete Analyser

EK025G: Free cyanide by Discrete Analyser

Free Cyanide

EG050F: Dissolved Hexavalent Chromium

Hexavalent Chromium

EG035F: Dissolved Mercury by FIMS

Mercury

<0.01

<0.01

<0.01

<0.01

<0.01

mg/L

18540-29-9 0.01

<0.0001

<0.0001

<0.0001

<0.0001

<0.0001

mg/L

7439-97-6 0.0001



 Page
 : 4 of 13

 Work Order
 : EM1104

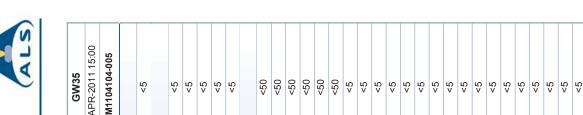
 Client
 : ENVIRO

 Project
 : 210074.

: 4 of 13 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Analytical Results

Sub-Matrix: WATER		Clie	Client sample ID	GW1	GW31	GW33	GW34	GW35
	Ö	ent samplin	Client sampling date / time	18-APR-2011 15:00				
Compound	CAS Number	LOR	Unit	EM1104104-001	EM1104104-002	EM1104104-003	EM1104104-004	EM1104104-005
EK026G: Total Cyanide By Discrete Analyser - Continued	- Continued							
Total Cyanide	57-12-5	0.004	mg/L	0.016	0.118	0.058	0.240	0.039
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser	Discrete Ana	alyser						
Weak Acid Dissociable Cyanide		0.004	mg/L	0.014	<0.004	0.007	0.010	<0.004
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	1.3	3.1	1.2	0.2	1.8
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	1.43	10.4	8.43	0.41	4.25
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N		0.01	mg/L	0.10	0.03	0.02	0.04	0.01
EK058G: Nitrate as N by Discrete Analyser								
^ Nitrate as N	14797-55-8	0.01	mg/L	0.39	1.37	4.11	0.07	0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser	iscrete Anal	yser						
Nitrite + Nitrate as N		0.01	mg/L	0.49	1.40	4.13	0.11	0.02
EK071G: Reactive Phosphorus as P by discrete analyser	te analyser							
Reactive Phosphorus as P	1	0.01	mg/L	<0.01	0.01	<0.01	0.11	<0.01
EK085M: Sulfide as S2-								
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EN055: Ionic Balance								
^ Total Anions	-	0.01	med/L	43.6	25.1	76.1	37.8	117
^ Total Cations	-	0.01	med/L	45.9	27.3	83.9	40.8	131
^ Ionic Balance	-	0.01	%	2.57	4.17	4.90	3.78	5.73
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	2	hg/L	<5	<5	<5	<5	<5
Isopropylbenzene	98-82-8	2	hg/L	<5	<5	<5	<5	<5
n-Propylbenzene	103-65-1	22	hg/L	<5	<5	<5	<5	<5
1.3.5-Trimethylbenzene	108-67-8	2	hg/L	<5	<5	<5	<5	<5
sec-Butylbenzene	135-98-8	22	hg/L	<5	<5	<5	<5	<5
1.2.4-Trimethylbenzene	95-63-6	2	hg/L	<5	<5	<5	<5	<5
tert-Butylbenzene	9-90-86	2	hg/L	<5	<5	<5	<5	<5
p-IsopropyItoluene	9-81-6	2	hg/L	<5	<5	<5	<5	<5
n-Butylbenzene	104-51-8	2	hg/L	<5	<5	<5	<5	<5
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	20	hg/L	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	20	hg/L	<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	20	hg/L	<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	20	hg/L	<50	<50	<50	<50	<50



Analytical Results

Project Client

Page Work Order

5 of 13 EM1104104 Amendment 1 ENVIRONMENTAL EARTH SCIENCES 210074 ALBERT PARK GAS WORKS

Sub-Matrix: WATER		Clie	Client sample ID	GW1	GW31	GW33	GW34	GW35
	Clie	ent samplir	Client sampling date / time	18-APR-2011 15:00				
Compound	CAS Number	LOR	Unit	EM1104104-001	EM1104104-002	EM1104104-003	EM1104104-004	EM1104104-005
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	hg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2.2-Dichloropropane	594-20-7	2	hg/L	<5	<5	<5	<5	<5
1.2-Dichloropropane	78-87-5	2	hg/L	<5	<5	<5	<5	<5
cis-1.3-Dichloropropylene	10061-01-5	2	hg/L	<5	<5	<5	<5	<5
trans-1.3-Dichloropropylene	10061-02-6	2	hg/L	<5	~ 2	~ 2	~ 2	<5
1.2-Dibromoethane (EDB)	106-93-4	2	hg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds	(0							
Dichlorodifluoromethane	75-71-8	20	hg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	20	hg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	20	hg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	20	hg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	20	hg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	20	hg/L	<50	<50	<50	<50	<50
1.1-Dichloroethene	75-35-4	ည	hg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	2	hg/L	<5	<5	<5	<5	<5
trans-1.2-Dichloroethene	156-60-5	ည	µg/L	<5	<5	<5	<5	<5
1.1-Dichloroethane	75-34-3	ည	µg/L	<5	<5	<5	<5	<5
cis-1.2-Dichloroethene	156-59-2	2	hg/L	<5	<5	<5	<5	<5
1.1.1-Trichloroethane	71-55-6	2	hg/L	<5	<5	<5	<5	<5
1.1-Dichloropropylene	563-58-6	ည	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	വ	µg/L	<5	<5	<5	<5	<5
1.2-Dichloroethane	107-06-2	2	hg/L	<5	<5	<5	^ 5	<5
Trichloroethene	79-01-6	2	hg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	ည	hg/L	<5	<5	<5	<5	<5
1.1.2-Trichloroethane	2-00-62	ည	hg/L	<5	<5	<5	<5	<5
1.3-Dichloropropane	142-28-9	2	hg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	2	hg/L	<5	<5	<5	<5	<5
1.1.1.2-Tetrachloroethane	630-20-6	2	hg/L	<5	<5	<5	<5	<5
trans-1.4-Dichloro-2-butene	110-57-6	2	hg/L	<5	<5	<5	<5	<5
cis-1.4-Dichloro-2-butene	1476-11-5	2	hg/L	<5	<5	<5	<5	<5
1.1.2.2-Tetrachloroethane	79-34-5	2	hg/L	<5	<5	<5	<5	<5
1.2.3-Trichloropropane	96-18-4	ည	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	ည	hg/L	<5	<5	<5	<5	<5
1.2-Dibromo-3-chloropropane	96-12-8	2	hg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	2	hg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds	6							
Chlorobenzene	108-90-7	2	hg/L	<5	<5	<5	<5	<5

A Campbell Brothers Limited Company



Project

: 6 of 13 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Page Work Order

Client

Analytical Results

_
H
Ë
<
<
7
.≥
+
7
2
غ
Ξ

•								
Sub-Matrix: WATER		Öje	Client sample ID	GW1	GW31	GW33	GW34	GW35
	Clie	nt samplii	Client sampling date / time	18-APR-2011 15:00				
Compound	CAS Number	LOR	Unit	EM1104104-001	EM1104104-002	EM1104104-003	EM1104104-004	EM1104104-005
EP074F: Halogenated Aromatic Compounds - Continued	ds - Continued							
Bromobenzene	108-86-1	2	hg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	ß	hg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	Ω	hg/L	<5	<5	<5	<5	<5
1.3-Dichlorobenzene	541-73-1	Ω	hg/L	<5	<5	<5	<5	<5
1.4-Dichlorobenzene	106-46-7	വ	hg/L	<5	<5	<5	<5	<5
1.2-Dichlorobenzene	95-50-1	2	hg/L	<5	<5	<5	<5	<5
1.2.4-Trichlorobenzene	120-82-1	2	hg/L	<5	<5	<5	<5	<5
1.2.3-Trichlorobenzene	87-61-6	22	hg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	2	hg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	2	hg/L	<5	<5 <	<5	<5	<5
Dibromochloromethane	124-48-1	22	hg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	2	hg/L	<5	<5	<5	<5	<5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ocarbons							
Naphthalene	91-20-3	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	hg/L	9.0>	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	< 1.0
Benzo(g.h.i)perylene	191-24-2	1.0	hg/L	<1.0	<1.0	<1.0	<1.0	<1.0
EP080/071: Total Petroleum Hydrocarbons	0							
C6 - C9 Fraction	-	20	hg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	-	20	hg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	-	100	hg/L	270	<100	<100	<100	280
C29 - C36 Fraction	-	20	hg/L	09	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)		50	hg/L	330	<50	<50	<50	280
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft	ons - NEPM 2010	Draft						
C6 - C10 Fraction	-	20	hg/L	<20	<20	<20	<20	<20

A Campbell Brothers Limited Company





: 7 of 13 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Page Work Order

Analytical Results

Project Client

Sub-Matrix: WATER		Clie	Client sample ID	GW1	GW31	GW33	GW34	GW35
	Clie	ent samplin	Client sampling date / time	18-APR-2011 15:00				
Compound	CAS Number	LOR	Uniť	EM1104104-001	EM1104104-002	EM1104104-003	EM1104104-004	EM1104104-005
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft	- NEPM 2010	Draft - C	- Continued					
^ C6 - C10 Fraction minus BTEX (F1)	-	20	hg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	-	100	hg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	-	100	hg/L	290	<100	<100	<100	240
>C34 - C40 Fraction	1	100	hg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	1	100	hg/L	290	<100	<100	<100	240
EP080: BTEXN								
Benzene	71-43-2	-	hg/L		7	₹	7	\
Toluene	108-88-3	2	hg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	hg/L	<2	<2	<2	<2	<2
meta- & para-Xylene 108-38	108-38-3 106-42-3	2	hg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	7	hg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	hg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	-	-	hg/L	₹	7	7	7	۲>
Naphthalene	91-20-3	2	hg/L	<5	<5	<5	<5	<5
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	118	121	119	108	115
Toluene-D8	2037-26-5	0.1	%	112	113	111	109	110
4-Bromofluorobenzene	460-00-4	0.1	%	112	110	114	105	108
EP075(SIM)S: Phenolic Compound Surrogates	Š							
Phenol-d6	13127-88-3	0.1	%	26.3	22.6	28.5	36.9	32.5
2-Chlorophenol-D4	93951-73-6	0.1	%	58.3	51.9	64.4	82.4	80.5
2.4.6-Tribromophenol	118-79-6	0.1	%	74.7	92.6	108	93.4	96.7
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	57.8	77.2	90.0	87.7	86.1
Anthracene-d10	1719-06-8	0.1	%	76.4	84.1	97.1	95.0	95.0
4-Terphenyl-d14	1718-51-0	0.1	%	80.1	86.0	102	104	94.6
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	117	118	103	106	113
Toluene-D8	2037-26-5	0.1	%	107	107	95.0	104	105
4-Bromofluorobenzene	460-00-4	0.1	%	108	108	95.8	103	105



Analytical Results

Project Client

Page Work Order

: 8 of 13 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Sub-Matrix: WATER		Clien	Client sample ID	GW6	TRIP 1		1	
	Clier	ıt sampling	Client sampling date / time	18-APR-2011 15:00	18-APR-2011 15:00			
Compound	CAS Number	LOR	Unit	EM1104104-006	EM1104104-007	1	!	!
EA005: pH								
pH Value		0.01	pH Unit	6.97		-	1	1
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	GIS-210-010	2	mg/L	1190			-	
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	_	mg/L	^	1	-	1	1
Carbonate Alkalinity as CaCO3	3812-32-6	-	mg/L		-	1	1	1
Bicarbonate Alkalinity as CaCO3	71-52-3	-	mg/L	262	-	1	-	1
Total Alkalinity as CaCO3		-	mg/L	262	1	1	1	1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	/ DA							
Sulfate as SO4 - Turbidimetric	14808-79-8	-	mg/L	72	-	1	1	1
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	_	mg/L	466		-	-	
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	-	mg/L	44		-	-	•
Magnesium	7439-95-4	-	mg/L	51		1	-	
Sodium	7440-23-5	-	mg/L	247	-	1	1	1
Potassium	7440-09-7	_	mg/L	17	1	-	1	1
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01		-	-	1
Arsenic	7440-38-2	0.001	mg/L	0.002	1	1	1	1
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	1	-	1	1
Cobalt	7440-48-4	0.001	mg/L	<0.001	-	-	-	
Copper	7440-50-8	0.001	mg/L	0.003	-		1	1
Lead	7439-92-1	0.001	mg/L	<0.001	1	-	1	1
Manganese	7439-96-5	0.001	mg/L	0.018			-	
Nickel	7440-02-0	0.001	mg/L	0.004				
Selenium	7782-49-2	0.01	mg/L	<0.01	1	1	1	1
Zinc	7440-66-6	0.005	mg/L	0.010	1	-	1	1
Boron	7440-42-8	0.05	mg/L	1.54	-		1	1
Iron	7439-89-6	0.05	mg/L	<0.05			-	
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001			-	
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01			1	1
EK025G: Free cyanide by Discrete Analyser								
Free Cyanide	-	0.004	mg/L	90.00			-	1
EK026G: Total Cyanide By Discrete Analyser								

A Campbell Brothers Limited Company



Page Work Order Project Client

: 9 of 13 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Analytical Results

Sub-Matrix: WATER		Clie	Client sample ID	GW6	TRIP 1			
	Clie	nt samplin	Client sampling date / time	18-APR-2011 15:00	18-APR-2011 15:00		-	-
Compound	CAS Number	LOR	Unit	EM1104104-006	EM1104104-007	1	1	1
EK026G: Total Cyanide By Discrete Analyser - Continued	Continued							
Total Cyanide	57-12-5	0.004	mg/L	90.0	-			-
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser	iscrete Ana	lyser						
Weak Acid Dissociable Cyanide	-	0.004	mg/L	0.007	-		-	1
EK040P: Fluoride by PC Titrator								
	16984-48-8	0.1	mg/L	1.3	-			-
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.43			-	1
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	-	0.01	mg/L	0.01	-			
EK058G: Nitrate as N by Discrete Analyser								
^ Nitrate as N	14797-55-8	0.01	mg/L	0.89			-	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser	screte Analy	ser						
Nitrite + Nitrate as N		0.01	mg/L	0.90				-
EK071G: Reactive Phosphorus as P by discrete analyser	te analyser							
Reactive Phosphorus as P	1	0.01	mg/L	<0.01	-	-	-	1
EK085M: Sulfide as S2-								
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1				1
EN055: Ionic Balance								
^ Total Anions	-	0.01	med/L	19.9	-			
^ Total Cations	-	0.01	med/L	17.5				
^ Ionic Balance		0.01	%	6.26				
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	2	hg/L	<5	<5			
Isopropylbenzene	98-85-8	2	hg/L	<5	<5	-		
n-Propylbenzene	103-65-1	2	hg/L	<5	<5			
1.3.5-Trimethylbenzene	108-67-8	2	hg/L	<5	<5			
sec-Butylbenzene	135-98-8	2	hg/L	<5	<5			
1.2.4-Trimethylbenzene	92-63-6	2	hg/L	<5	<5			
tert-Butylbenzene	9-90-86	2	hg/L	<5	<5			
p-IsopropyItoluene	9-81-6	2	hg/L	<5	<5			
n-Butylbenzene	104-51-8	2	hg/L	<5	<5			
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	20	hg/L	<50	<50			
2-Butanone (MEK)	78-93-3	20	hg/L	<50	<50			
4-Methyl-2-pentanone (MIBK)	108-10-1	20	hg/L	<50	<50			
2-Hexanone (MBK)	591-78-6	20	hg/L	<50	<50			



Analytical Results

Project Client

: 10 of 13 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Page Work Order

•								
Sub-Matrix: WATER		C	Client sample ID	GW6	TRIP 1	-	-	-
	CC	ient sampl	Client sampling date / time	18-APR-2011 15:00	18-APR-2011 15:00	-	-	-
Compound	CAS Number	LOR	Unit	EM1104104-006	EM1104104-007	1	1	1
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	hg/L	<5	<5		-	1
EP074D: Fumigants								
2.2-Dichloropropane	594-20-7	2	hg/L	<5	<5	-	1	-
1.2-Dichloropropane	78-87-5	2	hg/L	<5	<5		-	
cis-1.3-Dichloropropylene	10061-01-5	2	hg/L	<5	<5	1	1	1
trans-1.3-Dichloropropylene	10061-02-6	2	hg/L	<5	<5	-	-	
1.2-Dibromoethane (EDB)	106-93-4	2	hg/L	<5	<5			
EP074E: Halogenated Aliphatic Compounds	sp							
Dichlorodifluoromethane	75-71-8	20	hg/L	<50	<50	1	1	1
Chloromethane	74-87-3	20	hg/L	<50	<50		-	
Vinyl chloride	75-01-4	20	hg/L	<50	<50			
Bromomethane	74-83-9	20	hg/L	<50	<50	1	1	1
Chloroethane	75-00-3	20	hg/L	<50	<50		1	1
Trichlorofluoromethane	75-69-4	20	hg/L	<50	<50	-		
1.1-Dichloroethene	75-35-4	S	hg/L	<5	<5	1	1	1
Iodomethane	74-88-4	2	hg/L	<5	<5	-	-	-
trans-1.2-Dichloroethene	156-60-5	2	hg/L	<5	<5			
1.1-Dichloroethane	75-34-3	2	hg/L	<5	<5			
cis-1.2-Dichloroethene	156-59-2	2	hg/L	<5	<5	-	-	-
1.1.1-Trichloroethane	71-55-6	2	hg/L	<5	<5			
1.1-Dichloropropylene	563-58-6	2	hg/L	<5	<5	1	1	1
Carbon Tetrachloride	56-23-5	2	hg/L	<5	<5	•	•	
1.2-Dichloroethane	107-06-2	2	hg/L	<5	<5		1	1
Trichloroethene	79-01-6	S	hg/L	<5	<5	1	1	1
Dibromomethane	74-95-3	2	hg/L	<5	<5	1	1	-
1.1.2-Trichloroethane	2-00-62	2	hg/L	<5	<5			
1.3-Dichloropropane	142-28-9	2	hg/L	<5	<5			
Tetrachloroethene	127-18-4	2	hg/L	<5	<5			
1.1.1.2-Tetrachloroethane	630-20-6	2	hg/L	<5	<5			
trans-1.4-Dichloro-2-butene	110-57-6	2	hg/L	<5	<5			
cis-1.4-Dichloro-2-butene	1476-11-5	2	hg/L	<5	<5			
1.1.2.2-Tetrachloroethane	79-34-5	2	hg/L	<5	<5	-		
1.2.3-Trichloropropane	96-18-4	2	hg/L	<5	<5	1	1	1
Pentachloroethane	76-01-7	2	hg/L	<5	<5	1	1	1
1.2-Dibromo-3-chloropropane	96-12-8	2	hg/L	<5	<5			
Hexachlorobutadiene	87-68-3	2	hg/L	<5	<5		-	
EP074F: Halogenated Aromatic Compounds	sp							
Chlorobenzene	108-90-7	2	hg/L	<5	<5			

A Campbell Brothers Limited Company



Analytical Results

: 11 of 13	: EM1104104 Amendment 1	: ENVIRONMENTAL EARTH SCIENCES	: 210074 ALBERT PARK GAS WORKS
Page	Work Order	Client	Project

			L					
Sub-Matrix: WATER		Clier	Client sample ID	GW6	TRIP 1	1	!	
	Clie	nt samplin	Client sampling date / time	18-APR-2011 15:00	18-APR-2011 15:00	-		1
Compound	CAS Number	LOR	Unit	EM1104104-006	EM1104104-007	1	1	1
EP074F: Halogenated Aromatic Compounds - Continued	Continued							
Bromobenzene	108-86-1	2	hg/L	<5	<5	-		
2-Chlorotoluene	95-49-8	2	hg/L	<5	<5	-		-
4-Chlorotoluene	106-43-4	2	hg/L	<5	<5	-		-
1.3-Dichlorobenzene	541-73-1	2	hg/L	<5	<5	1	1	1
1.4-Dichlorobenzene	106-46-7	2	hg/L	<5	<5	-		
1.2-Dichlorobenzene	95-50-1	2	hg/L	<5	<5	-		
1.2.4-Trichlorobenzene	120-82-1	2	hg/L	~ 2	<5	1		
1.2.3-Trichlorobenzene	87-61-6	2	hg/L	<5	<5	-	-	
EP074G: Trihalomethanes								
Chloroform	67-66-3	2	hg/L	<5	<5			-
Bromodichloromethane	75-27-4	2	hg/L	<5	<5	1	-	1
Dibromochloromethane	124-48-1	2	hg/L	<5	<5	-		-
Bromoform	75-25-2	5	hg/L	<5	<5			-
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	suoc							
Naphthalene	91-20-3	1.0	hg/L	<1.0	-	-	-	1
Acenaphthylene	208-96-8	1.0	hg/L	<1.0	1	-		1
Acenaphthene	83-32-9	1.0	hg/L	<1.0	-	-		
Fluorene	86-73-7	1.0	hg/L	<1.0	1	1	1	1
Phenanthrene	85-01-8	1.0	hg/L	<1.0	-	-		-
Anthracene	120-12-7	1.0	hg/L	<1.0		-		-
Fluoranthene	206-44-0	1.0	hg/L	<1.0	-	-		
Pyrene	129-00-0	1.0	hg/L	<1.0				
Benz(a)anthracene	56-55-3	1.0	hg/L	<1.0				
Chrysene	218-01-9	1.0	hg/L	<1.0		-		
Benzo(b)fluoranthene	205-99-2	1.0	hg/L	<1.0	-	-	-	1
Benzo(k)fluoranthene	207-08-9	1.0	hg/L	<1.0				
Benzo(a)pyrene	50-32-8	0.5	hg/L	<0.5	-			
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	hg/L	<1.0				
Dibenz(a.h)anthracene	53-70-3	1.0	hg/L	<1.0				
Benzo(g.h.i)perylene	191-24-2	1.0	hg/L	<1.0				
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	I	20	hg/L	<20	<20	-		
C10 - C14 Fraction		20	hg/L	<50	<50			
C15 - C28 Fraction	-	100	hg/L	<100	<100			
C29 - C36 Fraction		20	hg/L	<50	<50			
^ C10 - C36 Fraction (sum)	-	20	hg/L	<50	<50			
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft	NEPM 2010	Draft						
C6 - C10 Fraction		20	hg/L	<20	<20			

A Campbell Brothers Limited Company





: EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Work Order

Client Project Analytical Results

11 11 | | | | | | l | | | | | | | | 18-APR-2011 15:00 EM1104104-007 TRIP 1 <100 <100 <100 <100 112 108 104 103 103 ۲۷ ۲۷ ۲۷ <u>^</u> ∧ | | | V 7 7 18-APR-2011 15:00 EM1104104-006 GW6 <100 <100 <100 56.5 <100 114 109 106 53.5 64.0 71.6 112 105 104 67.4 ₹ % 7 ^ \ \cdot \c Client sample ID Client sampling date / time hg/L µg/L µg/L EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft - Continued % % % % % % % % % % % % LOR 0.1 0.1 0.1 0.1 0.7 0.1 0. 0.1 0.1 0.1 0.1 2 N N N \sim 2 13127-88-3 118-79-6 17060-07-0 2037-26-5 460-00-4 CAS Number -71-43-2 108-88-3 100-41-4 108-38-3 106-42-3 95-47-6 1330-20-7 91-20-3 17060-07-0 2037-26-5 460-00-4 93951-73-6 321-60-8 1719-06-8 1718-51-0 EP075(SIM)S: Phenolic Compound Surrogates EP080S: TPH(V)/BTEX Surrogates ^ C6 - C10 Fraction minus BTEX (F1) EP075(SIM)T: PAH Surrogates EP074S: VOC Surrogates ^ >C10 - C40 Fraction (sum) 4-Bromofluorobenzene 4-Bromofluorobenzene 1.2-Dichloroethane-D4 1.2-Dichloroethane-D4 2.4.6-Tribromophenol meta- & para-Xylene >C16 - C34 Fraction >C10 - C16 Fraction >C34 - C40 Fraction 2-Chlorophenol-D4 Sub-Matrix: WATER 2-Fluorobiphenyl **EP080: BTEXN** 4-Terphenyl-d14 Anthracene-d10 Total Xylenes A Sum of BTEX Ethylbenzene ortho-Xylene Naphthalene Toluene-D8 Toluene-D8 Compound Phenol-d6 Benzene Toluene





: 13 of 13 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

> Client Project

Page Work Order

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	Limits (%)
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	74	128
4-Bromofluorobenzene	460-00-4	70	132
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	58
2-Chlorophenol-D4	93951-73-6	10	124
2.4.6-Tribromophenol	118-79-6	26	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	32	122
Anthracene-d10	1719-06-8	34	136
4-Terphenyl-d14	1718-51-0	34	140
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	131
Toluene-D8	2037-26-5	72	124
4-Bromofluorobenzene	460-00-4	70	126

Amer Bodicoc reeld 18/4/1, 5:30 Peter

CHAIN OF CUSTODY ALS Laboratory: please tick >

| Malbourse.2-4 Vrastal Rd. Springwate VIC 3171 Ph.03 852 a Rofo E sewings intellocensing electrotracom. | Adalates: 2-1 Burner Rd. Process S.A. 50% Pt. 70 8359 0890 Emittelor@accord.

Perth: 10 Hod Wey, Malege WA 6090
 Pro 2007 0955 E. seminipole portiligasionno.com
 Lauroeston: 27 Weilington St. Lauroeston TAS 7250
 Ph. 03 6331 2158 E. lauroeston@deenviro.com

Control Cont	New Standard or unament TAT () let due detail	nt TAT (L	st due d	ate).				Control of the Control	これに対することできるとのできるというできることできることできることできる	一門 がしたではない でんとく おとうになったい こうないしん
ALS QUOTE NO.: ME(015/11 V3				· lan				Custody a	Custody Seal Intacf?	- Se (
CONTACT PH: 0403 033 796 SAMPLER MOBILE: 0437 033 796 EDD FORMAT (or default): ENMRG & ESDAT ALLS ALLS ALLS ANTRIX TYPE & PRESERVATI (refer to codes below 18/04/2011 18/04/2011 18/04/2011 18/04/2011 18/04/2011 18/04/2011 18/04/2011 18/04/2011					COC SEQUENCE NUMBER (Circle)	IMBER (Circle)		Page los	Prise los Trazen los brioks present upon receipt?	3)
SAMPLER MOBILE: 0437 033 796			8	3	4 5			Random S	Random Sample Temperature on Receipt:	0.0
SAMPLER MOBILE: 0437 033 796 EDD FORMAT (or default); ENMRG & ESDAT ALLS (aler(W) 18/04/2011 18/04/2011 18/04/2011 18/04/2011 18/04/2011 18/04/2011 18/04/2011 18/04/2011 18/04/2011 18/04/2011			0 1	2	4.5	1000		Other comment	ment.	7 .4 .
EDD FORMAT (or default): ENMRG & ESDAT	RELINQUISHED BY:		REC	RECEIVED BY:			sá.	RELINQUISHED BY:	DBY:	RECEIVED BY:
18/04/2011 18/										Kari
AIL.S Nater(W)	DATE/TIME: 18/4/2011 3:30pm	30рт	DATE	DATE/TIME:				DATE/TIME:		
S Water(W) DATE TIME MATRIX TYP 18/04/2011										16 4/11 4:40
SAMPLE DETAILS MATRIX: Solid(S) Water(W) GW1 GW1 GW3 GW3 GW3 GW3 GW3 TYP TYP TYP TYP TYP TYP TYP TY										
1 GW1 18/04/2011 18/04/20	ORMATION			ANALYSIS Where N	ANALYSIS REQUIRED including SUITES (NB: Suite Codes must be listed to attract suite price) where Melsis are required, specify total (unflined bottle required) or Dissolved (lead filtered bottle required).	SUITES (NB. Suite Co	odes must be r Dissolved (fi	listed to attract id filtered bottle req	suite price)	Additional Information
1 GW1	TOTAL	PH, TDS, Free Cyanide, Total cyanide, WAD cyanide, Sulphide	NT-2 Package - Cs, Mg, Ns, K	NT-2 Package - OO2, NO3, FI, NT-3 Package - NO2, NO3, FI, Reactive P	NH4 - Ammonium - (field pH and field femperature must be recorded)	Dissolved metals - AI, As, Cd, Cu, Fe, Pb, Ni, Zn, Co, Se, B, Mn & Hg (lab to c entrifuge , filter and scidify from red/green metals bottle) Hexavalent Chromium	W-10 Package -	A9 elqms2	Environ M M M M	Environmental Division Melbourne Work Order Work Order
2 GW31 18/04/2011 3 GW33 18/04/2011 5 GW35 18/04/2011 6 GW6 18/04/2011 7 Trip 18/04/2011	80	×	×	×	×	×	×	7.01	21.20	
3 GW33 4 GW34 18/04/2011 5 GW5 6 GW6 7 Trip 1 18/04/2011 18/04/2011 (Extra		×	×	×	×	×	×	7.09	19.30	
6 GW6 181042011 7 Trip 1 18942011 (Extra	80	×	×	×	×	×	×	727	19.55	
6 GW6 18104/2011 7 Trip 1 18/04/2011 (Extra	60	×	×	×	×	×	×	7.67	20,60 Telephone	Telephone: +61-3-8549 9600
7 Trip 1 18/04/2011 (Extra	0	×	×	×	×	×	×	727	19.90	-
7 Trip 1 18/04/2011 (Extra	0	×	×	×	×	×	×	6.97	20.00	
		1					×	δ	9 Package	as per
			-						Carol	Walsh (
)h:
		1						1		
		1							I-E	
	TOTAL 48	ю	9	9	6	ø	9			





Environmental Division

QUALITY CONTROL REPORT

: 1 of 16		Environmental Division Melbourne Carol Walsh	: 4 Westall Rd Springvale VIC Australia 3171	carol.walsh@alsenviro.com +61-3-8549 9608 +61-3-8549 9601	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement	: 18-APR-2011	30-MAY-2011			
Page : 1		Laboratory : E		E-mail : C Telephone : + Facsimile : +	QC Level : N	Date Samples Received : 1	Issue Date : 3		No. of samples received : 7 No. of samples analysed : 7	
: EM1104104	Ţ	: ENVIRONMENTAL EARTH SCIENCES - MR DAVID JAMES	P.O.BOX 2253 FOOTSCRAY VIC, AUSTRALIA 3011	: djames@eesi.biz : +61 96871666 : +61 03 96871844	: 210074 ALBERT PARK GAS WORKS :	:		:	: ME/015/11 V3	
Work Order	Amendment	Client	Address	E-mail Telephone Facsimile	Project Site	C-O-C number	Sampler	Order number	Quote number	

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

This Quality Control Report contains the following information:

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

<	NATA	
<	NATA	

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

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

Accreditation Category	Melbourne Inorganics	Melbourne Inorganics	Melbourne Organics	Melbourne Inorganics	Melbourne Organics
Position	Senior Inorganic Chemist	Laboratory Coordinator	Senior Semivolatile Instrument Chemist	QC Officer	Senior Organic Chemist
Signatories	Dilani Fernando	Herman Lin	Nancy Wang	Valda Chen	Xingbin Lin



Work Order : EM1104104 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 210074 ALBERT PARK GAS WORKS

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 insuffient 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.

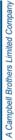
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot Key:

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

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC





: 3 of 16 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS Work Order Client

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%.

						O vactorate I	pond (0)(0) oferiland variations I		
Laboratory sample ID	Client sample ID	Marking Commonwell	CAS Number	108	Unit	Original Result	Dunlicate Result	RPD (%)	Recovery Limits (%)
EA005: pH (QC Lot: 1757178)	1757178)	metrod, Compound							
EM1104076-001	Anonymous	FA005: pH Value	-	0.01	pH Unit	7.49	7.50	0.1	0% - 20%
EM1104104-006	GW6	EA005: pH Value	1	0.01	pH Unit	6.97	6.95	0.3	0% - 20%
EA015: Total Dissolv	EA015: Total Dissolved Solids (QC Lot: 1757856)	_							
EM1104102-001	Anonymous	EA015H: Total Dissolved Solids @180°C	GIS-210-010	S	mg/L	904	934	3.3	0% - 20%
EM1104125-001	Anonymous	EA015H: Total Dissolved Solids @180°C	GIS-210-010	2	mg/L	7950	6640	18.0	0% - 20%
ED037P: Alkalinity b	ED037P: Alkalinity by PC Titrator (QC Lot: 1759595)	1595)							
EM1104076-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	_	mg/L	٧	Ÿ	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	-	mg/L	٧	<u>\</u>	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	-	mg/L	487	490	0.7	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	1	-	mg/L	487	490	0.7	0% - 20%
EM1104104-003	GW33	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	-	mg/L	٧	<u>^</u>	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	^	۲>	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	-	mg/L	314	318	1.3	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	-	1	mg/L	314	318	1.3	0% - 20%
ED041G: Sulfate (Tu	ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	A (QC Lot: 1755291)							
EM1104042-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	_	mg/L	28	27	0.0	0% - 20%
EM1104100-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	,	mg/L	250	251	0.0	0% - 20%
ED045G: Chloride D	ED045G: Chloride Discrete analyser (QC Lot: 1756866)	756866)							
EM1104077-003	Anonymous	ED045G: Chloride	16887-00-6	_	mg/L	^	_	0.0	No Limit
EM1104100-001	Anonymous	ED045G: Chloride	16887-00-6	_	mg/L	1120	1110	0.0	0% - 20%
ED093F: Dissolved Major Cations	Major Cations (QC Lot: 1756865)	8865)							
EM1104077-003	Anonymous	ED093F: Calcium	7440-70-2	-	mg/L	٧	<u>^</u>	0.0	No Limit
		ED093F: Magnesium	7439-95-4	_	mg/L	۲	<u>^</u>	0.0	No Limit
		ED093F: Sodium	7440-23-5	-	mg/L	٧	<u>^</u>	0.0	No Limit
		ED093F: Potassium	7440-09-7	-	mg/L	۲	<u>^</u>	0.0	No Limit
EM1104100-001	Anonymous	ED093F: Calcium	7440-70-2	-	mg/L	26	28	5.0	0% - 20%
		ED093F: Magnesium	7439-95-4	_	mg/L	69	74	7.0	0% - 20%
		ED093F: Sodium	7440-23-5	_	mg/L	983	286	0.4	0% - 20%
		ED093F: Potassium	7440-09-7	_	mg/L	15	17	9.0	%05 - %0
EG020F: Dissolved	EG020F: Dissolved Metals by ICP-MS (QC Lot: 1762449)	1762449)							
EM1104086-001	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	0.020	0.020	0.0	0% - 20%
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	9000	900.0	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.002	0.0	No Limit



ENVIRONMENTAL EARTH SCIENCES 210074 ALBERT PARK GAS WORKS EM1104104 Amendment 1 Work Order Project Client

Recovery Limits (%) RPD (%) 0.0 0.4 0.0 0.0 0.0 0.0 0.0 0.0 3.2 Laboratory Duplicate (DUP) Report Original Result Duplicate Result <0.0001 <0.05 <0.001 <0.01 <0.01 0.280 0.025 0.012 0.002 0.002 0.761 900.0 0.014 <0.01 <0.01 0.154 0.51 <0.0001 <0.001 0.286 0.002 0.014 0.155 0.025 <0.01 <0.05 0.002 0.792 0.007 0.011 <0.01 0.49 mg/L Unit 0.0001 0.001 0.001 0.001 0.001 0.001 0.005 0.001 0.001 0.001 0.001 0.005 0.01 0.01 0.05 0.05 LOR 7429-90-5 7782-49-2 7440-43-9 7440-48-4 7440-50-8 7440-66-6 7440-42-8 7440-38-2 7440-02-0 7439-92-1 7439-96-5 7440-02-0 7440-66-6 7440-42-8 7439-89-6 7439-92-1 7439-96-5 EG020A-F: Manganese EG020A-F: Manganese EG020F: Dissolved Metals by ICP-MS (QC Lot: 1762449) - continued EM1104086-001 Anonymous EG020A-F: Lead EG020A-F: Aluminium EG020A-F: Aluminium EG020A-F: Selenium EG020A-F: Selenium EG020A-F: Cadmium EG020A-F: Arsenic EG020A-F: Copper EG020A-F: Cobalt Method: Compound EG020A-F: Nickel EG020A-F: Boron EG020A-F: Nickel EG020A-F: Lead FG020A-F: Roron EG020A-F: Zinc EG020A-F: Zinc EG020A-F: Iron Client sample ID GW35 Laboratory sample ID Sub-Matrix: WATER EM1104104-005

0% - 20% 0% - 20% No Limit

No Limit

No Limit

%09 - %0

No Limit

No Limit 0% - 20% No Limit

No Limit No Limit 0% - 20%

No Limit No Limit No Limit

EG0205F: Dissolved Macrolury by FIMS (QCL Lot: 176248) EG020AF: Iron 7438-89-6 0.06 mg/L 0.09 0.05 5.7 No EK1104066-001 Anonymous EG03SF: Meruny 7438-97-6 0.0001 mg/L <0.0001 0.00 No EK1104066-001 GW3S EG03SF: Meruny 7438-97-6 0.0001 mg/L <0.0001 0.00 No EK1104066-001 GW3S EG03SF: Meruny 7438-97-6 0.0001 mg/L <0.0001 0.00 No EK1104066-002 Anonymous EG03SF: Hexavalent Chromium 18540-29-9 0.01 mg/L <0.001 0.00 No EK1104068-002 Anonymous EK02SG: Free Cyanide EK1104069-001 mg/L <0.01 mg/L <0.004 0.0 No EK1104102-002 Anonymous EK02SG: Tree Cyanide EK02SG: Tree Cyanide 57-12-5 0.004 mg/L <0.004 0.0 No EK102SG: Tree Cyanide EK02SG: Tree Cyanide EK02SG: Tree Cyanide EK02SG: Tree Cyanide 57-12-5 0.00			EGUZUA-I. DOI OI I	0-34-04-7	0.00	IIIg/L	60.1	00.1	o. -	0/07 - 0/0
ury 7439-97-6 0.0001 mg/L <0.0001 <0.0001 0.0 ury 7439-97-6 0.0001 mg/L <0.0001 <0.0001 0.0 valent Chromium 18540-29-9 0.01 mg/L <0.01 <0.001 0.0 valent Chromium 18540-29-9 0.01 mg/L <0.01 <0.01 0.0 Cyanide 0.004 mg/L <0.004 0.0 Cyanide 57-12-5 0.004 mg/L <0.004 0.0 Cyanide 57-12-5 0.004 mg/L <0.004 <0.004 0.0 Cyanide 57-12-5 0.004 mg/L <0.004 <0.004 0.0 Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 de </td <td></td> <td></td> <td>EG020A-F: Iron</td> <td>7439-89-6</td> <td>0.05</td> <td>mg/L</td> <td>0.09</td> <td>0.05</td> <td>52.7</td> <td>No Limit</td>			EG020A-F: Iron	7439-89-6	0.05	mg/L	0.09	0.05	52.7	No Limit
uny 7439-97-6 0.0001 mg/L <0.0001 <0.0001 0.0 uny 7439-97-6 0.0001 mg/L <0.0001 <0.0001 0.0 valent Chromium 18540-29-9 0.01 mg/L <0.01 <0.001 0.0 valent Chromium 18540-29-9 0.01 mg/L <0.01 <0.01 0.0 Cyanide 0.004 mg/L <0.012 <0.004 0.0 Cyanide 0.004 mg/L <0.004 <0.004 0.0 Cyanide 57-12-5 0.004 mg/L <0.004 <0.004 0.0 Cyanide 57-12-5 0.004 mg/L <0.004 <0.004 0.0 Cyalide 0.004 mg/L <0.004 <0.004 0.0 Cyalid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 de 16984-48-8 0.1 mg/L <0.004 <0.004 <0.004	EG035F: Dissolved	Mercury by FIMS (QC Lot: 1	762448)							
ury 7439-97-6 0.0001 mg/L <0.0001 <0.0001 0.0 valent Chromium 18540-29-9 0.01 mg/L <0.01 <0.01 0.0 Cyanide —— 0.004 mg/L <0.004 0.004 101 Cyanide —— 0.004 mg/L <0.004 0.004 0.0 Cyanide 57-12-5 0.004 mg/L <0.004 0.004 0.0 Cyal Dissociable Cyanide — 0.004 mg/L <0.004 0.004 0.0 Adid Dissociable Cyanide — 0.004 mg/L <0.004 0.004 0.0 dele 16984-48-8 0.1 mg/L <0.1 0.0 0.0 dele	EM1104086-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
valent Chromium 18540-29-9 0.01 mg/L <0.01 <0.01 0.0 valent Chromium 18540-29-9 0.01 mg/L <0.01 <0.01 0.0 Cyanide — 0.004 mg/L <0.004 101 Cyanide — 0.004 mg/L <0.004 0.0 Cyanide 57-12-5 0.004 mg/L <0.004 0.0 Cyanide 57-12-5 0.004 mg/L <0.004 0.0 Cyanide 57-12-5 0.004 mg/L <0.004 0.0 Cyald Dissociable Cyanide — 0.004 mg/L <0.004 0.0 Acid Dissociable Cyanide — 0.004 mg/L <0.004 0.0 Acid Dissociable Cyanide — 0.004 mg/L <0.004 0.0 Acid Dissociable Cyanide 16984-48-8 0.1 mg/L <0.004 0.0 Acid Dissociable Cyanide 1004 0.0 0.0 0.0 0.0 Aci	EM1104104-005	GW35	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
valent Chromium 18540-29-9 0.01 mg/L <0.01 <0.01 0.0 0.0 valent Chromium 18540-29-9 0.01 mg/L <0.012 <0.01 0.0 0.0 Cyanide 0.004 mg/L <0.004 <0.004 0.0 Cyanide 57-12-5 0.004 mg/L <0.010 <0.004 0.0 Cyald Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 dele 1698-4-48-8 0.1 mg/L <0.0	EG050F: Dissolved	Hexavalent Chromium (QC	Lot: 1758097)							
valent Chromium 18540-29-9 0.01 mg/L <0.01 <0.01 0.00 101 0.00 0.0	EM1103957-037	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.0	No Limit
Cyanide 0.004 mg/L 0.012 <0.004 101 Cyanide 0.004 mg/L <0.004	EM1104059-002	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.0	No Limit
KOZ5G: Free Cyanide 0.004 mg/L 0.012 <0.004 101 Lot: 1762777) Lot: 1762777) Accompanie 0.004 mg/L <0.004 <0.004 0.00 KOZ6G: Total Cyanide 57-12-5 0.004 mg/L <0.004 <0.004 0.00 KOZ8G: Weak Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 KO28G: Weak Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 KO28G: Weak Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 KO40P: Fluoride 16984-48-8 0.1 mg/L <0.1 <0.1 <0.0 Lot: 1759210) 1.2 1.2 0.0	EK025G: Free cyan	ide by Discrete Analyser (QC	C Lot: 1764418)							
Action Color (ACA)	EM1104104-001	GW1	EK025G: Free Cyanide	1	0.004	mg/L	0.012	<0.004	101	No Limit
cot: 1762777) KO26G: Total Cyanide 57-12-5 0.004 mg/L <0.004 <0.004 0.0 KO28G: Total Cyanide 57-12-5 0.004 mg/L <0.004 <0.004 88.5 KO28G: Weak Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 K040P: Fluoride 16984-48-8 0.1 mg/L <0.01 <0.004 0.0 K040P: Fluoride 16984-48-8 0.1 mg/L <0.1 <0.01 0.0 Lot: 1759210) mg/L 1.2 1.2 0.0 0.0 0.0	EM1104129-004	Anonymous	EK025G: Free Cyanide		0.004	mg/L	<0.004	<0.004	0.0	No Limit
KO26G: Total Cyanide 57-12-5 0.004 mg/L <0.004 <0.004 0.0 KO26G: Total Cyanide 57-12-5 0.004 mg/L 0.010 <0.004 88.5 KO28G: Weak Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 KO40P: Fluoride 16984-48-8 0.1 mg/L <0.10 <0.0 0.0 KO40P: Fluoride 16984-48-8 0.1 mg/L <0.1 <0.1 0.0 Lot: 1759210) 1.2 1.2 0.0 0.0 0.0	:K026G: Total Cyar	nide By Discrete Analyser (C	AC Lot: 1762777)							
KO26G: Total Cyanide 57-12-5 0.004 mg/L 0.010 <0.004 88.5 te Analyser (QC Lot: 1757156) KO28G: Weak Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 KO40P: Fluoride 16984-48-8 0.1 mg/L <0.1 <0.1 0.0 KO40P: Fluoride 16984-48-8 0.1 mg/L <0.1 1.2 1.2 0.0 Lot: 1759210)	EM1104102-003	Anonymous	EK026G: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.0	No Limit
te Analyser (QC Lot: 1757156) K028G: Weak Acid Dissociable Cyanide 0.004 mg/L <0.004	EM1104127-003	Anonymous	EK026G: Total Cyanide	57-12-5	0.004	mg/L	0.010	<0.004	88.5	No Limit
K028G: Weak Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 K028G: Weak Acid Dissociable Cyanide 0.004 mg/L <0.004	K028G: Weak Acid	d Dissociable Cyanide By Dis	screte Analyser (QC Lot: 1757156)							
K028G: Weak Acid Dissociable Cyanide 0.004 mg/L <0.004 <0.004 0.0 K040P: Fluoride 16984-48-8 0.1 mg/L 1.2 1.2 0.0 Lot: 1759210)	EM1104102-002	Anonymous	EK028G: Weak Acid Dissociable Cyanide	1	0.004	mg/L	<0.004	<0.004	0.0	No Limit
KO40P: Fluoride 16984-48-8 0.1 mg/L <0.1 <0.1 0.0 K040P: Fluoride 16984-48-8 0.1 mg/L 1.2 1.2 0.0	EM1104142-001	Anonymous	EK028G: Weak Acid Dissociable Cyanide	-	0.004	mg/L	<0.004	<0.004	0.0	No Limit
16984-48-8 0.1 mg/L <0.1 <0.1 0.0 0.0 1.2 1.2 0.0 0.0 1.2 0.0 0.0 1.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	EK040P: Fluoride b	y PC Titrator (QC Lot: 17595	(96)							
16984-48-8 0.1 mg/L 1.2 1.2 0.0	EM1104077-003	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 1759210)	EM1104104-003	GW33	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.2	1.2	0.0	%09 - %0
	EK055G: Ammonia	as N by Discrete Analyser (QC Lot: 1759210)							



Page : 5 of 16

Work Order : EM1104104 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 210074 ALBERT PARK GAS WORKS

Sub-Matrix: WATER						Laboratory L	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK055G: Ammonia a	is N by Discrete Analyser (EK055G: Ammonia as N by Discrete Analyser(QC Lot: 1759210)- continued							
EM1104077-003	Anonymous	EK055G: Ammonia as N	7-14-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM1104104-001	GW1	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	1.43	1.40	2.1	0% - 20%
EK057G: Nitrite as N	EK057G: Nitrite as N by Discrete Analyser (QC	(QC Lot: 1756864)							
EM1104055-005	Anonymous	EK057G: Nitrite as N	-	0.01	mg/L	0.04	0.04	0.0	No Limit
EM1104100-001	Anonymous	EK057G: Nitrite as N	-	0.01	mg/L	0.75	0.75	0.0	0% - 20%
EK059G: Nitrite plus	Nitrate as N (NOx) by Disc	EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 1759209)							
EM1104069-001	Anonymous	EK059G: Nitrite + Nitrate as N		0.01	mg/L	4.47	4.37	2.4	0% - 20%
EM1104102-002	Anonymous	EK059G: Nitrite + Nitrate as N	1	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK071G: Reactive Ph	hosphorus as P by discrete	EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 1756868)							
EM1104100-001	Anonymous	EK071G: Reactive Phosphorus as P	-	0.01	mg/L	12.0	11.9	9.0	0% - 20%
EM1104108-003	Anonymous	EK071G: Reactive Phosphorus as P	-	0.01	mg/L	<0.01	0.02	0.0	No Limit
EK085M: Sulfide as §	EK085M: Sulfide as S2- (QC Lot: 1757090)								
EM1104042-001	Anonymous	EK085: Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic	EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1762083)	ac Lot: 1762083)							
EM1104104-001	GW1	EP074: Styrene	100-42-5	2	hg/L	<5×	~ 2	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	2	hg/L	<5	^2	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	D.	hg/L	\$	² 5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	22	hg/L	<5	~2	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	2	hg/L	~ 2	~ 22	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	22	hg/L	<5	~2	0.0	No Limit
		EP074: tert-Butylbenzene	9-90-86	2	hg/L	<5	<5	0.0	No Limit
		EP074: p-lsopropyltoluene	9-84-66	2	hg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	2	hg/L	<5	~ 2	0.0	No Limit
EM1104104-006	GW6	EP074: Styrene	100-42-5	2	hg/L	<5	^ 2	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	2	hg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	2	µg/L	<5	<5	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	2	hg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	9-90-86	2	hg/L	<5	<5	0.0	No Limit
		EP074: p-lsopropyltoluene	9-28-66	2	hg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	2	hg/L	<5	<5	0.0	No Limit
EP074B: Oxygenated	EP074B: Oxygenated Compounds (QC Lot: 1762083)	(2083)							
EM1104104-001	GW1	EP074: Vinyl Acetate	108-05-4	20	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	20	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	20	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	20	µg/L	<50	<50	0.0	No Limit
EM1104104-006	GW6	EP074: Vinyl Acetate	108-05-4	20	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	20	hg/L	<50	<50	0.0	No Limit



Page Work Order Client Project

: 6 of 16 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Sub-Matrix: WATER						Laboratory	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074B: Oxygenate	EP074B: Oxygenated Compounds (QC Lot: 1762083)	762083) - continued							
EM1104104-006	GW6	EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	20	hg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	20	hg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated	EP074C: Sulfonated Compounds (QC Lot: 1762083)	62083)							
EM1104104-001	GW1	EP074: Carbon disulfide	75-15-0	2	hg/L	<5	<5	0.0	No Limit
EM1104104-006	GW6	EP074: Carbon disulfide	75-15-0	22	hg/L	\ 5	<5	0.0	No Limit
EP074D: Fumigants	(QC Lot: 1762083)								
EM1104104-001	GW1	EP074: 2.2-Dichloropropane	594-20-7	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	2	hg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	22	hg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	22	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	22	hg/L	<5	<5	0.0	No Limit
EM1104104-006	GW6	EP074: 2.2-Dichloropropane	594-20-7	22	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	22	hg/L	\ 5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	22	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	22	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	22	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenate	EP074E: Halogenated Aliphatic Compounds (QC Lot: 1762083)	(QC Lot: 1762083)							
EM1104104-001	GW1	EP074: 1.1-Dichloroethene	75-35-4	22	hg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	22	hg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	22	hg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	2	hg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	22	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	22	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	22	hg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	22	hg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	22	hg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	2-00-62	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	2	hg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Tetrachloroethane	630-20-6	2	hg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	22	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	2	hg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	2	hg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	22	hg/L	~ 2	~ 22	0.0	No Limit



: 7 of 16 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Page Work Order

Project Client

Laboratory sample ID	Client sample ID	Machood Common	CAS Number	108	Unit	Original Result	al Result Duplicate Result	RPD (%)	Recovery Limits (%)
MAZAE. Hologopto	oballogues of supplied of the	Metricus Compound						(2)	
PU74E: Halogenate	ed Allphatic Compounds	EP0/4E: Halogenated Aliphatic Compounds (עכ בסנ: יו הצלומא) - continued			·				
EM1104104-001	GW1	EP074: Dichlorodifluoromethane	75-71-8	20	hg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	20	hg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	20	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	20	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	20	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	20	hg/L	<50	<50	0.0	No Limit
EM1104104-006	GW6	EP074: 1.1-Dichloroethene	75-35-4	2	hg/L	^ 22	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	2	µg/L	<5	^ 2	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	2	µg/L	<5	~ 2	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	22	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	2	µg/L	\\	^	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	2	µg/L	\\ 2	^	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	2	hg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	2	hg/L	\$	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	2	hg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	2	hg/L	<5 2	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	22	hg/L	^2	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	2-00-62	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	2	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	2	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	2	hg/L	<5	~	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	22	hg/L	<5	~	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	2	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	22	hg/L	<5	~	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	2	hg/L	<5	~ 5	0.0	No Limit
		EP074: Pentachloroethane	7-10-92	2	hg/L	<5	~ 5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	2	hg/L	<5	~	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	2	hg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	20	hg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	20	hg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	20	hg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	20	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	20	hg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	20	µg/L	<50	<50	0.0	No Limit
P074F: Halogenate	EP074F: Halogenated Aromatic Compounds (QC Lot: 1762083)	(QC Lot: 1762083)							
EM1104104-001	GW1	EP074: Chlorobenzene	108-90-7	2	hg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	2	µg/L	<5	\ 5	0.0	No Limit
		EP074: 2-Chlorotoluene	92-49-8	2	µg/L	<5	<5	0.0	No Limit
					D	Ļ		(



Page Work Order Client Project

: 8 of 16 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Sub-Matrix: WATER						Laboratory L	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074F: Halogenate	d Aromatic Compounds (EP074F: Halogenated Aromatic Compounds (QC Lot: 1762083) - continued							
EM1104104-001	GW1	EP074: 1.3-Dichlorobenzene	541-73-1	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	22	hg/L	<5	<5	0.0	No Limit
EM1104104-006	GW6	EP074: Chlorobenzene	108-90-7	2	hg/L	~ 5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	2	hg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	22	hg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	Ω.	hg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	Ω.	hg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	22	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	22	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	22	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	2	hg/L	<5	<5	0.0	No Limit
EP074G: Trihalometl	EP074G: Trihalomethanes (QC Lot: 1762083)								
EM1104104-001	GW1	EP074: Chloroform	67-66-3	2	hg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	2	hg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	22	hg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	2	hg/L	<5	<5	0.0	No Limit
EM1104104-006	GW6	EP074: Chloroform	67-66-3	2	hg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	2	hg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	22	hg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	2	hg/L	<5	<5	0.0	No Limit
EP075(SIM)B: Polynt	EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1758261)	bons (QC Lot: 1758261)							
EM1104104-001	GW1	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	hg/L	9.0>	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	82-01-8	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	26-55-3	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	202-99-2	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	hg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1.0	hg/L	<1.0	<1.0	0.0	No Limit



ENVIRONMENTAL EARTH SCIENCES 210074 ALBERT PARK GAS WORKS

EM1104104 Amendment 1

Work Order

Client Project

9 of 16

Recovery Limits (%) No Limit **RPD** (%) 0.0 55.6 58.4 0.0 0.0 0.0 0.0 57.1 0.0 0.0 0.0 0.0 0.0 0.0 20.1 0.0 0.0 0.0 0.0 0.0 0.0 Laboratory Duplicate (DUP) Repor Duplicate Result <100 ۸ 1.0 <100 <100 <100 260 340 220 450 60 280 120 ²⁰ ²⁰ V 7 γ γ γ 3 5 Ÿ 7 ₩ ₩ 7 5 Original Result × 0.1.0 <100 <100 <100 <100 290 180 [<]20 270 9 160 20 ^20 ²20 ²20 ²20 9 ∀ Ÿ \$ ^ ^ \ \$ \$ 5 7 hg/L hg/L hg/L hg/L µg/L hg/L hg/L hg/L µg/L hg/L µg/L hg/L µg/L hg/L hg/L hg/L hg/L hg/L hg/L hg/L Unit hg/L hg/L hg/L hg/L hg/L hg/L hg/L LOR 0. 50 50 100 9 9 9 20 20 2 2 8 8 2 N 2 N 2 N N 191-24-2 | 95-47-6 91-20-3 CAS Number 71-43-2 108-88-3 100-41-4 08-38-3 106-42-3 71-43-2 108-88-3 100-41-4 106-42-3 95-47-6 91-20-3 08-38-3 EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1758261) - continued EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 1758260) EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 1759318) EP080/071; Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 1762082) EP075(SIM): Benzo(g.h.i)perylene EP080: meta- & para-Xylene EP071: >C16 - C34 Fraction EP071: >C34 - C40 Fraction EP071: >C10 - C16 Fraction EP071: >C16 - C34 Fraction EP071: >C34 - C40 Fraction EP080: meta- & para-Xylene EP071: >C10 - C16 Fraction EP071: C10 - C14 Fraction EP071: C29 - C36 Fraction EP071: C15 - C28 Fraction EP071: C10 - C14 Fraction EP071: C29 - C36 Fraction EP071: C15 - C28 Fraction EP080: C6 - C10 Fraction EP080: C6 - C10 Fraction EP080: C6 - C9 Fraction EP080: C6 - C9 Fraction EP080: Ethylbenzene EP080: Ethylbenzene EP080: ortho-Xylene EP080: Naphthalene EP080: ortho-Xylene EP080: Naphthalene Method: Compound EP080: Benzene EP080: Benzene EP080: Toluene EP080: Toluene EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1758260) EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1759318) EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1762082) Client sample ID EP080: BTEXN (QC Lot: 1762082) Anonymous Anonymous GW6 GW6 GW1 GW1 GW1 GW1 GW1 GW1 GW6 Laboratory sample ID Sub-Matrix: WATER EM1104127-002 EM1104127-002 EM1104104-001 EM1104104-001 EM1104104-006 EM1104104-001 EM1104104-001 EM1104104-006 EM1104104-006 EM1104104-001 EM1104104-001



ENVIRONMENTAL EARTH SCIENCES 210074 ALBERT PARK GAS WORKS EM1104104 Amendment 1 Work Order Project Client

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

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 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 analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER				Method Blank (MB)		Laboratory Control Spike (LCS) Report	SS) Report	
				Report	Spike	Spike Recovery (%)	Recovery Limits (%)	imits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SOT	Гом	High
EA015: Total Dissolved Solids (QCLot: 1757856)								
EA015H: Total Dissolved Solids @180°C	GIS-210-010	5	mg/L	<5	2000 mg/L	103	86	104
ED037P: Alkalinity by PC Titrator (QCLot: 1759595)								
ED037-P: Total Alkalinity as CaCO3	-	-	mg/L		200 mg/L	90.5	77	127
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 1755291)	t: 1755291)							
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	_	mg/L	>	12.5 mg/L	114	81	125
ED045G: Chloride Discrete analyser (QCLot: 1756866)								
ED045G: Chloride	16887-00-6	F	mg/L	₹	1000 mg/L	96.2	89	117
ED093F: Dissolved Major Cations (QCLot: 1756865)								
ED093F: Calcium	7440-70-2	_	mg/L	>	5 mg/L	85.4	81	129
ED093F: Magnesium	7439-95-4	_	mg/L	>	5 mg/L	112	80	120
ED093F: Sodium	7440-23-5	_	mg/L	^	50 mg/L	80.4	78	124
ED093F: Potassium	7440-09-7	_	mg/L	^	50 mg/L	79.6	79	121
EG020F: Dissolved Metals by ICP-MS (QCLot: 1762449)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	98.4	80	120
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	93.0	87	109
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	102	88	110
EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	100	87	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.5	86	108
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	103	06	110
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.6	87	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	101	86	112
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	97.0	83	111
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	101	98	120
EG020A-F: Boron	7440-42-8	0.05	mg/L	<0.05	0.1 mg/L	91.0	61	133
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	96.5	79	119
EG035F: Dissolved Mercury by FIMS (QCLot: 1762448)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	92.5	71	125
EG050F: Dissolved Hexavalent Chromium (QCLot: 1758097	097)							
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	88.0	80	120
EK025G: Free cyanide by Discrete Analyser (QCLot: 1764418)	4418)							
EK025G: Free Cyanide		0.004	mg/L	<0.004	0.5 mg/L	75.4	73	111
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1762777)	62777)							
EK026G: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	114	85	125

A Campbell Brothers Limited Company



ENVIRONMENTAL EARTH SCIENCES 210074 ALBERT PARK GAS WORKS

EM1104104 Amendment 1

Nork Order

Client Project

High 120 112 108 116 120 119 119 119 131 135 136 38 127 128 118 120 124 104 122 127 120 121 12 121 Recovery Limits (%) MO7 73 74 80 70 71 73 73 73 65 64 78 9/ 84 84 82 69 68 68 77 70 26 28 67 Laboratory Control Spike (LCS) Report Spike Recovery (%) 88.0 91.0 71.0 92.0 94.8 114 94.6 SO7 99.1 114 99.1 103 7 101 105 103 101 100 124 110 101 Concentration 200 µg/L 200 µg/L 200 µg/L 20 µg/L 20 µg/L 200 µg/L 20 µg/L 20 µg/L 20 µg/L 0.5 mg/L 10 mg/L 0.5 mg/L 0.5 mg/L 0.5 mg/L 0.5 mg/L 0.5 mg/L 20 µg/L **Method Blank (MB)** Result <0.004 <0.01 Report <0.01 <0.01 <0.01 ٥ 0 ٥. م <50 <50 <50 <50 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ 5 < 5 5 3 \$ mg/L mg/L mg/L mg/L mg/L mg/L hg/L µg/L hg/L hg/L hg/L hg/L hg/L hg/L Unit mg/L hg/L hg/L hg/L hg/L hg/L hg/L hg/L µg/L hg/L hg/L hg/L 0.004 0.10 LOR 0.01 0.01 0.01 0.01 0.1 2 20 20 20 2 2 2 2 2 2 2 2 EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser (QCLot: 1757156) EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1759209) EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 1756868) CAS Number 78-87-5 16984-48-8 18496-25-8 98-85-8 103-65-1 9-90-86 9-28-66 104-51-8 78-93-3 75-15-0 10061-01-5 7664-41-7 100-42-5 108-67-8 135-98-8 95-63-6 108-05-4 108-10-1 591-78-6 594-20-7 10061-02-6 106-93-4 EK055G: Ammonia as N by Discrete Analyser (QCLot: 1759210) EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1762083) EP074E: Halogenated Aliphatic Compounds (QCLot: 1762083) EK057G: Nitrite as N by Discrete Analyser (QCLot: 1756864) EP074B: Oxygenated Compounds (QCLot: 1762083) EP074C: Sulfonated Compounds (QCLot: 1762083) EK040P: Fluoride by PC Titrator (QCLot: 1759596) EK085M: Sulfide as S2- (QCLot: 1757090) EP074D: Fumigants (QCLot: 1762083) EK028G: Weak Acid Dissociable Cyanide EP074: 4-Methyl-2-pentanone (MIBK) EK071G: Reactive Phosphorus as P EP074: trans-1.3-Dichloropropylene EP074: 1.2-Dibromoethane (EDB) EP074: cis-1.3-Dichloropropylene EP074: 1.3.5-Trimethylbenzene EP074: 1.2.4-Trimethylbenzene EK059G: Nitrite + Nitrate as N EP074: 2.2-Dichloropropane EP074: 1.2-Dichloropropane EP074: p-Isopropyltoluene EP074: 2-Hexanone (MBK) EP074: 2-Butanone (MEK) EP074: Isopropylbenzene EP074: sec-Butylbenzene EP074: tert-Butylbenzene EP074: n-Propylbenzene EK055G: Ammonia as N EP074: Carbon disulfide EP074: n-Butylbenzene EK085: Sulfide as S2-EP074: Vinyl Acetate EK057G: Nitrite as N Sub-Matrix: WATER Method: Compound EK040P: Fluoride EP074: Styrene



: 12 of 16 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS Page Work Order Client

Project

Page 1999 Page 2009 Page	Sub-Matrix: WATER				Method Blank (MB)		Laboratory Control Spike (LCS) Report	CS) Report	
Compounds (Octor 1752018) - continuents) LOR Wint Result Control LOR Control Trigonounds (Octor 1752018) - control 850 ppt (%) %0 200 ppt (1112					Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
March Colon February March M	Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	Low	High
745718 50 µpUL <50 µpUL 50 µpUL 50 µpUL 50 µpUL 111 65 75014 50 µpUL <50	EP074E: Halogenated Aliphatic Compounds (QCL	ot: 1762083) - continued							
776 01-44	EP074: Dichlorodifluoromethane	75-71-8	20	µg/L	<50	200 µg/L	112	58	148
77-61-4 50 1991	EP074: Chloromethane	74-87-3	50	hg/L	<50	200 µg/L	111	62	142
7.48-29	EP074: Vinyl chloride	75-01-4	90	hg/L	<50	200 µg/L	# 59.6	61	141
75-00-3 50 Hg/L <60 200 μg/L 106 64 107 175-04 107 175-	EP074: Bromomethane	74-83-9	20	hg/L	<50	200 µg/L	107	57	131
76-69-4 50 1991	EP074: Chloroethane	75-00-3	20	hg/L	<50	200 µg/L	105	64	138
7.6-34-4 6 6 1 49°L	EP074: Trichlorofluoromethane	75-69-4	20	hg/L	<50	200 µg/L	106	29	131
14-884 5 9 1991	EP074: 1.1-Dichloroethene	75-35-4	2	hg/L	<5	20 µg/L	109	7.1	125
168-60-5 5 1991,	EP074: lodomethane	74-88-4	2	hg/L	<5	20 µg/L	113	61	135
156-542 5 pg/L < 5 20 pg/L 113 777 114-55 714-54	EP074: trans-1.2-Dichloroethene	156-60-5	2	hg/L	<5	20 µg/L	112	75	121
166562	EP074: 1.1-Dichloroethane	75-34-3	co.	hg/L	<5 2	20 µg/L	113	77	121
71-55-6 5 199'L	EP074: cis-1.2-Dichloroethene	156-59-2	22	hg/L	<5 25	20 µg/L	114	78	122
565-58-6 5 µg/L <5 Dµg/L <5 74 74 167-23-5 5 µg/L <5	EP074: 1.1.1-Trichloroethane	71-55-6	2	hg/L	<5	20 µg/L	108	70	120
56-23-5 5 µg/L <5 Dµg/L <5 Dµg/L <5 Dµg/L <5 Dµg/L 100 57 79-016 5 µg/L <5	EP074: 1.1-Dichloropropylene	563-58-6	co.	hg/L	<5	20 µg/L	# 122	74	122
107.06-2 5 µg/L	EP074: Carbon Tetrachloride	56-23-5	2	hg/L	<5	20 µg/L	100	57	123
79-01-6 5 μg/L 74-65-3 5 μg/L 74-65-3 5 μg/L 74-62-8-9 5 μg/L 74-62-8-9 5 μg/L 75-67-7 8-4 5 μg/L 75-67-7 8-4 5 μg/L 	EP074: 1.2-Dichloroethane	107-06-2	2	hg/L	<5	20 µg/L	116	75	125
74-96-3 5 pg/L	EP074: Trichloroethene	79-01-6	2	hg/L	\ \ \ \	20 µg/L	110	77	121
79-00-5 5 19µL <=5 20 µg/L 75	EP074: Dibromomethane	74-95-3	2	hg/L	~ 2	20 µg/L	112	92	122
142-28-9 5 19/L <5 20 pg/L 113 79 79 79 72-7-184 5 199/L <5 20 pg/L 113 76 76 76 76 76 76 76 7	EP074: 1.1.2-Trichloroethane	2-00-62	2	hg/L	\ 2	20 µg/L	117	78	126
127-18-4 5 μg/L 630-20-6 5 μg/L 630-20-6 5 μg/L 630-20-6 5 μg/L 630-20-6 5 μg/L 630-20-6 5 μg/L 630-20-6 5 μg/L 779-34-5 5 μg/L 86-18-8 5 μg/L 650-18-8 5 μg/L 	EP074: 1.3-Dichloropropane	142-28-9	2	hg/L	<5	20 µg/L	119	79	125
630-20-6 5 µg/L 110-57-6 1-3 µg/L 110-57-6 1-3 µg/L 110-57-7 110-57-7 110-57-8 5 µg/L 110-57-8 1 µg/L 110-58-9 1 µg/L 110-58-1 1 µg/L 110-50-1 µg/L 110-58-1 1 µ	EP074: Tetrachloroethene	127-18-4	2	hg/L	<5	20 µg/L	113	92	122
110-57-6 5 by ug/L <5 20 μg/L 65 89.0 46 80.0 46 70.1 476-11-5 5 μg/L 55 μg/L	EP074: 1.1.2-Tetrachloroethane	630-20-6	2	hg/L	<5	20 µg/L	102	65	119
1476-11-5 5 1 μg/L 79-34-5 5 μg/L 86-18-4 5 1 μg/L 86-18-4 5 1 μg/L 86-18-8 5 1 μg/L 87-68-3 5 1 μg/L 87-68-3 5 1 μg/L 87-68-3 5 1 μg/L 108-90-7 85-96-12-8 5 1 μg/L 108-90-7 5 1 μg/L 85-96-12-8 5 1 μg/L 108-90-7 5 1 μg/L 85-96-9-8 5 1 μg/L 85-80-1 6 1 μg/L 85-80-1 70 1 μg/L 85-96-9-8 5 1 μg/L 85-96-9-8 5 1 μg/L 85-96-9-9-9-9-9-9-9-9-9-9-9-9-9-9-9-9-9-9	EP074: trans-1.4-Dichloro-2-butene	110-57-6	2	hg/L	<5	20 µg/L	99.0	46	126
79-34-5 5 µg/L <5 20 µg/L 172 75 75 96-18-4 5 µg/L <5	EP074: cis-1.4-Dichloro-2-butene	1476-11-5	2	hg/L	<5	20 µg/L	76.1	54	132
96-18-4 5 μg/L <5 20 μg/L 76-01-7	EP074: 1.1.2.2-Tetrachloroethane	79-34-5	2	hg/L	\ \ \	20 µg/L	122	75	131
76-01-7 5 µg/L <5 µg/L <5 µg/L <5 90.gL/L 87.9 46 96-12-8 5 µg/L <5	EP074: 1.2.3-Trichloropropane	96-18-4	S	hg/L	<5	20 µg/L	118	75	133
96-12-8 5 µg/L <5 20 µg/L 99.3 54 9 Compounds (QCLot: 1762083) 108-90-7 5 µg/L <5 20 µg/L 113 81 75 108-90-7 5 µg/L <5 20 µg/L 108 75 73 95-49-8 5 µg/L <5 20 µg/L 102 73 73 106-43-4 5 µg/L <5 20 µg/L 106 73 72 541-73-1 5 µg/L <5 20 µg/L 106 78 74 95-50-1 5 µg/L <5 20 µg/L 99.5 74 74 95-50-1 5 µg/L <5 20 µg/L 96.0 56.0 56 120-82-1 5 µg/L <5 20 µg/L 96.0 56.0 56.0 87-61-6 5 µg/L <5 20 µg/L 102 78 74	EP074: Pentachloroethane	7-10-92	2	hg/L	<5	20 µg/L	87.9	46	118
natic Compounds (QCLot: 1762083) fpg/L c5 20 µg/L 65 20 µg/L 113 81 75 108-90-7 5 µg/L c5 20 µg/L 108 75 75 108-86-1 5 µg/L c5 20 µg/L 108 75 73 106-43-8 5 µg/L c5 20 µg/L 102 73 73 541-73-1 5 µg/L c5 20 µg/L 106 73 74 95-50-1 5 µg/L c5 20 µg/L 78 74 74 120-82-1 5 µg/L c5 20 µg/L 95.5 74 78 120-82-1 5 µg/L c5 20 µg/L 78 74 78 87-61-6 5 µg/L c5 20 µg/L 95.0 56 8	EP074: 1.2-Dibromo-3-chloropropane	96-12-8	2	hg/L	<5	20 µg/L	92.3	54	124
natic Compounds (QCLot: 1762083) 108-90-7 5 µg/L <5 20 µg/L 108 75 95-49-8 5 µg/L <5	EP074: Hexachlorobutadiene	87-68-3	5	hg/L	<5	20 µg/L	90.6	20	134
108-90-7 5 µg/L <5 20 µg/L 113 81 81 108-86-1 5 µg/L <5	EP074F: Halogenated Aromatic Compounds (QCL	-ot: 1762083)							
108-86-1 5 µg/L <5 20 µg/L 108 75 75 95-49-8 5 µg/L <5	EP074: Chlorobenzene	108-90-7	5	hg/L	<5	20 µg/L	113	81	121
95-49-8 5 µg/L <5 0 µg/L <5 73 73 106-43-4 5 µg/L <5	EP074: Bromobenzene	108-86-1	2	hg/L	<5	20 µg/L	108	75	119
106-43-4 5 µg/L <5 20 µg/L 102 72 541-73-1 5 µg/L <5	EP074: 2-Chlorotoluene	92-49-8	S	hg/L	\ 5	20 µg/L	103	73	121
541-73-1 5 µg/L <5 20 µg/L 73 73 106-46-7 5 µg/L <5	EP074: 4-Chlorotoluene	106-43-4	2	hg/L	\ \ \ \	20 µg/L	102	72	120
106-46-7 5 µg/L <5 20 µg/L 99.5 74 74 95-50-1 5 µg/L <5	EP074: 1.3-Dichlorobenzene	541-73-1	2	hg/L	<5	20 µg/L	106	73	119
95-50-1 5 μg/L <5 20 μg/L 106 78 120-82-1 5 μg/L <5	EP074: 1.4-Dichlorobenzene	106-46-7	2	hg/L	\ \ \	20 µg/L	99.5	74	120
120-82-1 5 μg/L <5 20 μg/L 56 87-61-6 5 μg/L <5 69	EP074: 1.2-Dichlorobenzene	95-50-1	2	hg/L	\ \ \ \	20 µg/L	106	78	118
87-61-6 5 µg/L <5 20 µg/L 69	EP074: 1.2.4-Trichlorobenzene	120-82-1	5	hg/L	<5	20 µg/L	95.0	56	128
	EP074: 1.2.3-Trichlorobenzene	87-61-6	5	hg/L	<5	20 µg/L	102	69	123



EP080/071: Total Petroleum Hydrocarbons (QCLot: 1758260)

Page Work Order Project Client

: 13 of 16 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Sub-Matrix: WATER				Method Blank (MB)		Laboratory Control Spike (LCS) Report	CS) Report	
				Report	Spike	Spike Recovery (%)	Recovery Limits (%)	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	Low	High
EP074G: Trihalomethanes (QCLot: 1762083) - continued								
EP074: Chloroform	67-66-3	5	hg/L	<5	20 µg/L	110	77	121
EP074: Bromodichloromethane	75-27-4	2	hg/L	<5	20 µg/L	102	69	117
EP074: Dibromochloromethane	124-48-1	2	hg/L	<5	20 µg/L	94.8	29	119
EP074: Bromoform	75-25-2	5	hg/L	<5	20 µg/L	83.8	49	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1758261)	t: 1758261)							
EP075(SIM): Naphthalene	91-20-3	-	hg/L	<1.0	5 µg/L	69.5	27.5	124
EP075(SIM): Acenaphthylene	208-96-8	-	hg/L	<1.0	5 µg/L	9.69	35	129
EP075(SIM): Acenaphthene	83-32-9	_	hg/L	<1.0	5 µg/L	7.07	35	127
EP075(SIM): Fluorene	86-73-7	_	hg/L	<1.0	5 µg/L	70.9	36	130
EP075(SIM): Phenanthrene	85-01-8	-	hg/L	<1.0	5 µg/L	78.0	42	132
EP075(SIM): Anthracene	120-12-7	_	hg/L	<1.0	5 µg/L	7.77	42	132
EP075(SIM): Fluoranthene	206-44-0	_	hg/L	<1.0	5 µg/L	76.8	41	141
EP075(SIM): Pyrene	129-00-0	_	hg/L	<1.0	5 µg/L	79.3	40	142
EP075(SIM): Benz(a)anthracene	56-55-3	_	hg/L	<1.0	5 µg/L	71.6	33	153
EP075(SIM): Chrysene	218-01-9	-	hg/L	<1.0	5 µg/L	88.1	37	145
EP075(SIM): Benzo(b)fluoranthene	205-99-2	-	hg/L	<1.0	5 µg/L	76.2	35	151
EP075(SIM): Benzo(k)fluoranthene	207-08-9	-	hg/L	<1.0	5 µg/L	70.8	39	141
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	hg/L	<0.5	5 µg/L	74.4	41	139
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	-	hg/L	<1.0	5 µg/L	82.5	35	141
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	-	hg/L	<1.0	5 µg/L	83.7	36	142
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	hg/L	<1.0	5 µg/L	83.4	10	142
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1759319)	t: 1759319)							
EP075(SIM): Naphthalene	91-20-3	-	hg/L	<1.0	5 µg/L	67.2	27.5	124
EP075(SIM): Acenaphthylene	208-96-8	-	hg/L	<1.0	5 µg/L	66.5	35	129
EP075(SIM): Acenaphthene	83-32-9	-	hg/L	<1.0	5 µg/L	69.4	35	127
EP075(SIM): Fluorene	86-73-7	1	hg/L	<1.0	5 µg/L	70.4	36	130
EP075(SIM): Phenanthrene	82-01-8	_	hg/L	<1.0	5 µg/L	76.0	42	132
EP075(SIM): Anthracene	120-12-7	1	hg/L	<1.0	5 µg/L	74.1	42	132
EP075(SIM): Fluoranthene	206-44-0	_	hg/L	<1.0	5 µg/L	74.2	41	141
EP075(SIM): Pyrene	129-00-0	_	hg/L	<1.0	5 µg/L	77.4	40	142
EP075(SIM): Benz(a)anthracene	56-55-3	1	hg/L	<1.0	5 µg/L	72.6	33	153
EP075(SIM): Chrysene	218-01-9	_	hg/L	<1.0	5 µg/L	77.8	37	145
EP075(SIM): Benzo(b)fluoranthene	205-99-2	-	hg/L	<1.0	5 µg/L	78.8	35	151
EP075(SIM): Benzo(k)fluoranthene	207-08-9	_	hg/L	<1.0	5 µg/L	76.2	39	141
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	hg/L	<0.5	5 µg/L	7.77	41	139
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	hg/L	<1.0	5 µg/L	77.8	35	141
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	hg/L	<1.0	5 µg/L	7.77	36	142
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	hg/L	<1.0	5 µg/L	78.5	10	142



: 14 of 16 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Page Work Order Client Project

Sub-Matrix: WATER				Method Blank (MB)		Laboratory Control Spike (LCS) Report	CS) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Method: Compound C.	CAS Number	LOR	Unit	Result	Concentration	SO7	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1758260) - continued	- continued							
EP071: C10 - C14 Fraction	-	90	hg/L	<50	5440 µg/L	122	64	124
EP071: C15 - C28 Fraction	1	100	hg/L	<100	17824 µg/L	109	70	130
EP071: C29 - C36 Fraction	-	20	hg/L	<50	3694 µg/L	113	89	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1759318)								
EP071; C10 - C14 Fraction		90	µg/L	<50	5440 µg/L	91.6	64	124
EP071: C15 - C28 Fraction	-	100	hg/L	<100	17824 µg/L	83.6	70	130
EP071: C29 - C36 Fraction	1	20	hg/L	<50	3694 µg/L	84.4	89	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1762082)								
EP080: C6 - C9 Fraction		20	hg/L	<20	320 µg/L	87.1	72	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1766090)								
EP071: C10 - C14 Fraction	-	20	hg/L	<50	-	1	1	-
EP071: C15 - C28 Fraction	1	100	hg/L	<100	1	1	ł	-
EP071: C29 - C36 Fraction	-	20	hg/L	<50		-	-	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 1758260)	ft (QCLot: 17	758260)						
EP071: >C10 - C16 Fraction	-	100	hg/L	<100	10320 µg/L	6.96	70	130
EP071: >C16 - C34 Fraction	1	100	µg/L	<100	16640 µg/L	110	70	130
EP071: >C34 - C40 Fraction	-	100	hg/L	<100	1080 µg/L	128	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 1759318)	ft (QCLot: 17	759318)						
EP071: >C10 - C16 Fraction	-	100	hg/L	<100	10320 µg/L	74.4	70	130
EP071: >C16 - C34 Fraction	1	100	hg/L	<100	16640 µg/L	84.5	70	130
EP071: >C34 - C40 Fraction	-	100	hg/L	<100	1080 µg/L	81.8	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 1762082)	ft (QCLot: 17	762082)						
EP080: C6 - C10 Fraction	-	20	hg/L	<20	370 µg/L	87.4	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 1766090)	ft (QCLot: 17	(06099						
EP071: >C10 - C16 Fraction	-	100	hg/L	<100		-	-	
EP071: >C16 - C34 Fraction		100	hg/L	<100				
EP071: >C34 - C40 Fraction	-	100	µg/L	<100		-	-	
EP080: BTEXN (QCLot: 1762082)								
EP080: Benzene	71-43-2	_	hg/L	\	20 µg/L	99.96	73	127
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.1	74	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	91.6	72	126
EP080: meta- & para-Xylene	108-38-3	2	hg/L	<2	40 µg/L	96.3	69	133
EP080: ortho-Xvlene	95-47-6	2	hg/L	<2	20 µg/L	98.2	74	128
EP080: Naphthalene	91-20-3	5	hg/L	<5	5 µg/L	114	70	130



: EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS : 15 of 16 Work Order Project Client

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory spilit sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte

recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER				Matrix Spike (MS) Report	מן	
			Spike	Spike Recovery (%)	Recovery Limits (%)	Limits (%)
Laboratory sample ID Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 1755291)	55291)					
EM1104047-001 Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130
ED045G: Chloride Discrete analyser (QCLot: 1756866)						
EM1104111-003 Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	126	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 1762449)						
EM1104086-001 Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	122	88	139
	EG020A-F: Cadmium	7440-43-9	0.05 mg/L	105	75	131
	EG020A-F: Cobalt	7440-48-4	0.2 mg/L	103	77	129
	EG020A-F: Copper	7440-50-8	0.2 mg/L	102	7.1	127
	EG020A-F: Lead	7439-92-1	0.2 mg/L	101	7.1	123
	EG020A-F: Manganese	7439-96-5	0.2 mg/L	93.7	99	132
	EG020A-F: Nickel	7440-02-0	0.2 mg/L	102	73	129
	EG020A-F: Zinc	7440-66-6	0.2 mg/L	111	89	136
EG035F: Dissolved Mercury by FIMS (QCLot: 1762448)						
EM1104086-001 Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	85.2	70	130
EG050F: Dissolved Hexavalent Chromium (QCLot: 1758097)						
EM1103957-038 Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	92.0	70	130
EK025G: Free cyanide by Discrete Analyser (QCLot: 1764418)						
EM1104104-002 GW31	EK025G: Free Cyanide		0.5 mg/L	94.4	20	130
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1762777)	(2)					
EM1104104-001 GW1	EK026G: Total Cyanide	57-12-5	0.2 mg/L	107	20	130
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser (QCLot: 1757156)	er (QCLot: 1757156)					
EM1104102-003 Anonymous	EK028G: Weak Acid Dissociable Cyanide		0.5 mg/L	85.3	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1759596)						
EM1104077-004 Anonymous	EK040P: Fluoride	16984-48-8	5.0 mg/L	98.6	20	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 1759210)	10)					
EM1104077-004 Anonymous	EK055G: Ammonia as N	7664-41-7	1.0 mg/L	125	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1756864)						
EM1104055-006 Anonymous	EK057G: Nitrite as N	-	0.5 mg/L	108	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1759209)	. (QCLot: 1759209)					
EM1104076-001 Anonymous	EK059G: Nitrite + Nitrate as N		0.5 mg/L	# Not Determined	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 1756868)	:Lot: 1756868)					
EM1104108-004 Anonymous	EK071G: Reactive Phosphorus as P	-	0.5 mg/L	104	70	130

A Campbell Brothers Limited Company



ALS.

Matrix Spike (MS) Report

: 16 of 16 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Page Work Order Client Project Sub-Matrix: WATER

				Spike	Spike Recovery (%)	Recovery Limits (%)	imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074E: Halogenate	EP074E: Halogenated Aliphatic Compounds (QCLot: 1762083)						
EM1104104-002	GW31	EP074: 1.1-Dichloroethene	75-35-4	20 µg/L	# 107	54	104
		EP074: Trichloroethene	79-01-6	20 µg/L	109	62	120
EP074F: Halogenate	EP074F: Halogenated Aromatic Compounds (QCLot: 1762083)						
EM1104104-002	GW31	EP074: Chlorobenzene	108-90-7	20 µg/L	118	89	132
EP080/071: Total Pet	EP080/071: Total Petroleum Hydrocarbons (QCLot: 1762082)						
EM1104104-002	GW31	EP080: C6 - C9 Fraction	-	280 µg/L	101	51	125
EP080/071: Total Red	EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 1762082)	(QCLot: 1762082)					
EM1104104-002	GW31	EP080: C6 - C10 Fraction	-	330 µg/L	102	70	130
EP080: BTEXN (QCLot: 1762082)	_ot: 1762082)						
EM1104104-002	GW31	EP080: Benzene	71-43-2	20 µg/L	105	63	131
		EP080: Toluene	108-88-3	20 µg/L	2.66	65	133



ANALYTICAL CHEMISTRY & TESTING SERVICES



Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

:1 of 13		: Environmental Division Melbourne : Carol Walsh : 4 Westall Rd Springvale VIC Australia 3171	: carol.walsh@alsenviro.com : +61-3-8549 9608 : +61-3-8549 9601	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement : 18-APR-2011	: 30-MAY-2011	7 : 7 :
Page		Laboratory Contact Address	E-mail Telephone Facsimile	QC Level Date Samples Received	Issue Date	No. of samples received No. of samples analysed
: EM1104104	₹.	: ENVIRONMENTAL EARTH SCIENCES : MR DAVID JAMES : P.O.BOX 2253 FOOTSCRAY VIC, AUSTRALIA 3011	: djames@eesi.biz : +61 96871666 : +61 03 96871844	: 210074 ALBERT PARK GAS WORKS : :		: ME/015/11 V3
Work Order	Amendment	Client Contact Address	E-mail Telephone Facsimile	Project Site C-O-C number	Sampler Order number	Quote number

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

Environmental Division Melbourne Part of the ALS Laboratory Group

4 Westall Rd Springvale VIC Australia 3171 Tel. +61-3-8549 9600 Fax. +61-3-8549 9601 www.alsglobal.com

A Campbell Brothers Limited Company



: ENVIRONMENTAL EARTH SCIENCES EM1104104 Amendment 1 Work Order Client

210074 ALBERT PARK GAS WORKS Project

Analysis Holding Time Compliance

extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the 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 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 Summary of Outliers.

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

Matrix: WATER					Evaluation:	= Holding time I	Evaluation: * = Holding time breach; < = Within holding time.	holding time.
Method		Sample Date	Ex	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005: pH								
Clear Plastic Bottle - Natural								
GW1,	GW31,	18-APR-2011	i	1	-	20-APR-2011	18-APR-2011	×
GW33,	GW34,							
GW35,	GW6							
EA015: Total Dissolved Solids								
Clear Plastic Bottle - Natural								
GW1,	GW31,	18-APR-2011	!	1		20-APR-2011	25-APR-2011	>
GW33,	GW34,							
GW35,	GW6							
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural								
GW1,	GW31,	18-APR-2011	ł	02-MAY-2011	-	21-APR-2011	02-MAY-2011	>
GW33,	GW34,							•
GW35,	GW6							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural								
GW1,	GW31,	18-APR-2011	1	16-MAY-2011	-	27-APR-2011	16-MAY-2011	>
GW33,	GW34,							
GW35,	GW6							
ED045G: Chloride Discrete analyser								
Clear Plastic Bottle - Natural								
GW1,	GW31,	18-APR-2011	I	16-MAY-2011	1	27-APR-2011	16-MAY-2011	>
GW33,	GW34,							
GW35,	GW6							
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Filtered; Lab-acidified								
GW1,	GW31,	18-APR-2011	1	16-MAY-2011	-	21-APR-2011	16-MAY-2011	>
GW33,	GW34,							•
GW35,	GW6							



Page : 3 of 13

Work Order : EM1104104 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 210074 ALBERT PARK GAS WORKS

Matrix: WATER					Evaluation:	x = Holding time	Evaluation: × = Holding time breach ; ✓ = Within holding time	holding time.
Method		Sample Date	Ex	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Filtered: I ab acidified								
GW1,	GW31,	18-APR-2011	ı	15-OCT-2011	-	28-APR-2011	15-OCT-2011	>
GW33,	GW34,							•
GW35,	GW6							
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Filtered; Lab-acidified								
GW1,	GW31,	18-APR-2011	ŀ	16-MAY-2011	-	28-APR-2011	16-MAY-2011	>
GW33,	GW34,							
GW35,	GW6							
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH								
GW1,	GW31,	18-APR-2011	!		-	20-APR-2011	16-MAY-2011	>
GW33,	GW34,							
GW35,	GW6							
EK025G: Free cyanide by Discrete Analyser								
White Plastic Bottle-NaOH								
GW1,	GW31,	18-APR-2011	28-APR-2011	02-MAY-2011	>	28-APR-2011	02-MAY-2011	>
GW33,	GW34,							
GW35,	GW6							
EK026G: Total Cyanide By Discrete Analyser								
White Plastic Bottle-NaOH								
GW1,	GW31,	18-APR-2011	27-APR-2011	02-MAY-2011	>	27-APR-2011	02-MAY-2011	>
GW33,	GW34,							
GW35,								
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser	e Analyser							
White Plastic Bottle-NaOH					,			,
GW1,	GW31,	18-APR-2011	20-APR-2011	02-MAY-2011	>	20-APR-2011	02-MAY-2011	>
GW050,	GW054, GW6							
TOWNS TO THE PROPERTY OF THE P								
Control of the contro								
Clear Plastic Bottle - Natural	GW31	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		7000		24 00 0044	46 MAX 2044	`
GW33	GW34	1107-1107-01	ŀ			1102-414-17		>
GW35,	GW6							
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid								
GW1,	GW31,	18-APR-2011	ŀ	16-MAY-2011	-	28-APR-2011	16-MAY-2011	`
GW33,	GW34,							•
GW35,	GW6							
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural								
GW1,	GW31,	18-APR-2011	I	20-APR-2011	1	19-APR-2011	20-APR-2011	>
GW33,	GW34,							
GW35,	GW6							
							A Campbell Brothers Limited Company	Limited Company



Page : 4 of 13

Work Order : EM1104104 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 210074 ALBERT PARK GAS WORKS

Matrix: WATER					Evaluation	: x = Holding time	Evaluation: x = Holding time breach; < = Within holding time	holding time.
Method		Sample Date	Ex	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser	Analyser							
Clear Plastic Bottle - Sulfuric Acid	POWO							,
GW1,	GW31,	18-APR-2011	1	16-MAY-2011		27-APR-2011	16-MAY-2011	>
GW35,	GW6							
EK071G: Reactive Phosphorus as P by discrete analyser	llyser							
Clear Plastic Bottle - Natural								
GW1,	GW31,	18-APR-2011	ŀ	20-APR-2011	-	19-APR-2011	20-APR-2011	>
GW33,	GW34,							
GW35,	GW6							
EK085M: Sulfide as S2-								
Clear Plastic Bottle - Zinc Acetate/NaOH								
GW1,	GW31,	18-APR-2011	ļ	1	-	20-APR-2011	25-APR-2011	>
GW33,	GW34,							
GWV35,	GWVD							
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial- NaHSO4 or H2SO4								
GW1,	GW31,	18-APR-2011	27-APR-2011	02-MAY-2011	>	28-APR-2011	02-MAY-2011	>
GW33,	GW34,							
GW35,	GW6,							
TRIP 1								
EP074B: Oxygenated Compounds								
Amber VOC Vial- NaHSO4 or H2SO4								
GW1,	GW31,	18-APR-2011	27-APR-2011	02-MAY-2011	>	28-APR-2011	02-MAY-2011	>
GW33,	GW34,							
GW35,	GW6,							
EP074C: Sultonated Compounds								
Amber VOC Vial- NaHSO4 or H2SO4								
GW1,	GW31,	18-APR-2011	27-APR-2011	02-MAY-2011	>	28-APR-2011	02-MAY-2011	>
GW33,	GW34,							
GW35, TRIP 1	GW6,							
ED074D: Eumisonte								
A STATE WOOD WELL MALISON ASSESSMENT								
Amber VOC Vial- NaHSO4 or HZSO4		4 6 7	4 6	7	`		200	`
GW.1,	GW31,	18-APR-2011	2/-APR-2011	UZ-IVIAT-2011	>	28-APR-2011	UZ-IVIAY -20 I I	>
GW35.	COVICE TO THE PART OF THE PART							
TRIP 1								
E B074E: Halogonated Alimbatic Communication								
EPU/4E: naiogenated Aliphatic Compounds								
Amber VOC Vial- NaHSO4 or H2SO4					,			,
GWI,	GW31,	18-APR-2011	27-APR-2011	02-MAY-2011	>	28-APR-2011	02-MAY-2011	>
GW33,	GW34,							
GW35,	GWb,							



Page : 5 of 13

Work Order : EM1104104 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 210074 ALBERT PARK GAS WORKS

Evaluation: x = Holding time breach; </ = Within holding time. Evaluation > > > > > > > > > > Due for analysis 02-MAY-2011 30-MAY-2011 31-MAY-2011 02-MAY-2011 31-MAY-2011 31-MAY-2011 30-MAY-2011 02-MAY-2011 30-MAY-2011 02-MAY-2011 28-APR-2011 28-APR-2011 28-APR-2011 27-APR-2011 28-APR-2011 27-APR-2011 28-APR-2011 Date analysed 28-APR-2011 27-APR-2011 28-APR-2011 Evaluation > > > > > > > > > > Date extracted Due for extraction Extraction / Preparation 02-MAY-2011 02-MAY-2011 25-APR-2011 25-APR-2011 25-APR-2011 25-APR-2011 25-APR-2011 25-APR-2011 02-MAY-2011 02-MAY-2011 27-APR-2011 27-APR-2011 27-APR-2011 20-APR-2011 27-APR-2011 20-APR-2011 20-APR-2011 21-APR-2011 21-APR-2011 21-APR-2011 18-APR-2011 Sample Date GW35, TRIP 1 GW35, TRIP 1 GW31, GW34, GW6, GW31, GW31, GW31, GW34, GW6, GW31, GW35, GW31, GW34, GW6, GW31, GW34, GW6, EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft EP075(SIM)B: Polynuclear Aromatic Hydrocarbons EP074F: Halogenated Aromatic Compounds EP080/071: Total Petroleum Hydrocarbons Amber VOC Vial. NaHSO4 or H2SO4 GW1, GW33, GW35, Amber VOC Vial- NaHSO4 or H2SO4 Amber VOC Vial- NaHSO4 or H2SO4 GW1, Amber VOC Vial- NaHSO4 or H2SO4 Amber Glass Bottle - Unpreserved Amber Glass Bottle - Unpreserved GW34, Amber Glass Bottle - Unpreserved Container / Client Sample ID(s) EP074G: Trihalomethanes Matrix: WATER GW34, GW34, GW1, GW33, GW35, TRIP 1 GW33 GW33, GW35, TRIP 1 GW1, GW33, GW35, TRIP 1 TRIP 1 GW33 GW33 GW1, GW1, GW1, GW6 GW6, Method



: 6 of 13 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS Page Work Order Client Project

				0,			A to the factor	
Method		Sample Date		Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Date extracted Due for extraction Evaluation Date analysed Due for analysis Evaluation	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN								
Amber VOC Vial- NaHSO4 or H2SO4								
GW1,	GW31,	18-APR-201	18-APR-2011 27-APR-2011 02-MAY-2011	02-MAY-2011	>	28-APR-2011	28-APR-2011 02-MAY-2011	>
GW33,	GW34,				•			•
GW35,	GW6,							
TRIP 1								



Work Order Project Client

: 7 of 13 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

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

	1
	9
	Side of Co.
	Ú
s.	
<u>e</u>	
0	
y o	
mar	
m	
<u>е</u>	
=	
ed	
<u> </u>	
s pr	
es	
ach	
pre	
gof	
stin	
= V	,
ate.	C L + 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
g S	4747
ect	-
exbe	1404

						Service Services	
Quality Control Sample Type		Ö	Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	ФC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	EK055G	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	/	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Fluoride by PC Titrator	EK040P	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Free CN by Discrete Analyser	EK025G	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Hexavalent Chromium - Dissolved	EG050F	2	20	10.0	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 (NOx) by Discrete Analyser	EK059G	2	17	11.8	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	2	17	11.8	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	~	-	9.1	10.0	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Hd	EA005	2	11	18.2	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfide as S2-	EK085	_	80	12.5	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)	EA015H	2	20	10.0	10.0	`	
TPH - Semivolatile Fraction	EP071	2	19	10.5	10.0	>	Schedule B(3)
TPH Volatiles/BTEX	EP080	2	18	11.1	10.0	\	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	13	15.4	10.0	/	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Weak Acid Dissociable Cyanide By Discrete Analyser	EK028G	2	17	11.8	10.0	`	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	-	20	5.0	2.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	EK055G	_	20	2.0	2.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	7	20	2.0	5.0	>	Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	_	20	2.0	2.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Fluoride by PC Titrator	EK040P	_	20	5.0	5.0	>	Schedule B(3) and ALS
Free CN by Discrete Analyser	EK025G	τ-	20	2.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Hexavalent Chromium - Dissolved	EG050F	_	20	2.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	τ-	20	5.0	5.0	>	
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	τ-	17	5.9	5.0	>	
Nitrite as N by Discrete Analyser	EK057G	~	17	5.9	5.0	>	Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	18	11.1	5.0	/	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	EK071G	-	20	2.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	_	20	2.0	2.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfide as S2-	EK085	-	∞	12.5	2.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	_	20	2.0	2.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement



Page Work Order Project Client

: 8 of 13 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Samples (LCS) - Continued Method QC Samples (LCS) - Continued EA015H 1 Fraction EP071 2 X EP080 1 x EP074 1 x ER028G 1 x ER028G 1 x X ER026G 1 x X ER026G 1 x X ER057G 1 x ER057G 1 x ER057G 1 x ER03F 1 x ER03F 1 x ER057G 1 x ER057G 1	Count QC Regular 1 20 1 13 1 13 1 13 1 20 1 20 1 20 1 20 1 20 1 20 1 17 2 18 2 18 2 1 2 1 2 1 3 1 4 8	5.0 10.5 5.6 5.6 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Agte (%) Expected Eva 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.	Neph 1999 Schedule B(3); Neph 1999 Schedule	Quality Control Specification NEPM 1999 Schedule B(3) and ALS QCS3 requirement
EA015H EP071 EP080 EP074 EP074 EP080 EP074 EF028G EF028G EF020A-F EF025G EF020A-F EF025G EF02		5.0 10.5 5.6 5.6 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0		NEPM 1999	edule B(3) and ALS QCS3 requirement
EA015H EP071 EP080 EP074 ER028G EP074 ER028G EQ035F EG035F EG035F EG020A-F EK040P EK025G EG050F EK040P EK059G		5.0 10.5 5.6 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0		NEPM 1999	edule B(3) and ALS QCS3 requirement
EA015H EP071 EP080 EP074 EP080 EP074 ER028G ER028G ER025G ER035F EG035F EG030A-F ER026G ER059G		5.0 10.5 5.6 5.9 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0		NEPM 1999	edule B(3) and ALS QCS3 requirement
EP071 EP080 EP074 EP080 EP074 ER028G ER026G EG035F EG035F EG030A-F EK040P EK026G EK056G EK056G EK056G EK056G EK051G EK051		10.5 5.6 5.9 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0		NEPM 1999	edule B(3) and ALS QCS3 requirement
EP080 EP074 ER028G ER028G ER055G ER045G EG035F EG020A-F ER040P ER020A-F ER040P ER050G ER050G ER050G ER050G ER051G		5.6 7.7 7.7 5.9 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0		NEPM 1999	edule B(3) and ALS QCS3 requirement
EP074 EK028G EK028G EK055G ED045G EG035F EG020A-F EK040P EK020G EK050G EK050G EK050G EK050G EK050G EK050G EK050G EK051G E		5.9 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0		NEPM 1999	edule B(3) and ALS QCS3 requirement
EK028G EK055G ED045G EG020A-F EK040P EK025G EK035F EK057G EK057G EK057G EK071G EK085		5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0		NEPM 1999	edule B(3) and ALS QCS3 requirement
EK055G ED045G ED045G EG036F EG020A-F EK040P EK026G EG050F EC050F EC050F EC050F EC050F EC050F EC050G EC050F EC050G		5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0		NEPM 1999 Sche	edule B(3) and ALS QCS3 requirement
EK055G ED045G ED045G EG035F EG020A-F EK040P EK025G EK056G EK056G EK056G EK056G EK056G EK056G EK056G EK051G EK071G EK085		5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0		NEPM 1999 Sche	edule B(3) and ALS QCS3 requirement
EG035F EG020A-F EG020A-F EK040P EK025G EK056G EK059G EK059G EK059G EK059G EK051G EK071G		5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	NEPM 1999 Sche	edule B(3) and ALS QCS3 requirement
EG020A-F EG020A-F EK040P EK025G EG050F EG050F EC050F EC050G		5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0		NEPM 1999 Sche	edule B(3) and ALS QCS3 requirement
EG020A-F EK040P EK025G EG050F EG050F EC050F EC050G EC050G EC050G EC050G EC050G EC050G EC050G EC071G EC071G EC085 EC071G EC085 EC071G EC085 EC071G EC085 EC085 EC085 EC086 EC071		5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 7.0 7.1 7.1	0 0 0 0 0 0 0	NEPM 1999 Sche	edule B(3) and ALS QCS3 requirement edule B(3) and ALS QCS3 requirement edule B(3) and ALS QCS3 requirement
EK040P EK026G EG050F ED033F ED033F EK059G EK057G EK071G EK071G EK085 EK086		5.0 5.0 5.0 5.0 5.0 5.3 7.3 7.1 7.1	0 0 0 0 0 0	NEPM 1999 Sche	edule B(3) and ALS QCS3 requirement edule B(3) and ALS QCS3 requirement
EK025G EG050F ED093F EK059G EK057G EK071G EK071G EK085 EK086		5.0 5.0 5.0 5.9 5.9 5.9	0 0 0 0 0	NEPM 1999 Sche NEPM 1999 Sche NEPM 1999 Sche NEPM 1999 Sche	edule B(3) and ALS QCS3 requirement
EG050F ED093F EK059G EK057G EK071G EK071G EK085 EK086 EK086 EK086 EK086 EK086 EK086 EK026G		5.0 5.9 5.9 6.3 7.11.1	5.0	NEPM 1999 Sche NEPM 1999 Sche NEPM 1999 Sche NEPM 1999 Sche	
ED093F EK059G EK057G EK057G EK071G EK071G EK085 EK086 EK026G EK026G EA015H EP071 EP071 EP071 EP071		5.9 5.9 11.1	5.0	NEPM 1999 Sche NEPM 1999 Sche NEPM 1999 Sche	Schedule B(3) and ALS QCS3 requirement
EK059G EK057G EF075(SIM) EK071G EK071G EK085 EK026G EK026G EA015H EP071		5.9	5.0	NEPM 1999 Sche	Schedule B(3) and ALS QCS3 requirement
EK057G EP075(SIM) EK071G ED041G EK086 EK026G EA015H EP071 EP071 EP080 ER028G		5.9	2.0		NEPM 1999 Schedule B(3) and ALS QCS3 requirement
EP075(SIM)		11.1	:		Schedule B(3) and ALS QCS3 requirement
EK071G ED041G EK085 EK026G EA015H EP071 EP071 EP074 EP074		2.0	2.0	NEPM 1999 Sche	Schedule B(3) and ALS QCS3 requirement
ED041G EK085 EK026G EA015H EP071 EP071 EP080 EP074			2.0	NEPM 1999 Sche	Schedule B(3) and ALS QCS3 requirement
EK085 EK026G EA015H EP071 EP080 EP074 EK028G		2.0	2.0	NEPM 1999 Sche	Schedule B(3) and ALS QCS3 requirement
EK026G EA015H EP071 EP080 EP074 EK028G		12.5	2.0	V NEPM 1999 Sche	Schedule B(3) and ALS QCS3 requirement
EA015H EP071 EP080 EP074 EK028G		5.0	2.0	✓ NEPM 1999 Sche	Schedule B(3) and ALS QCS3 requirement
EP071 EP080 EP074 EK028G	1 20	5.0	2.0	✓ NEPM 1999 Sche	Schedule B(3) and ALS QCS3 requirement
EP080 EP074 EK028G		10.0	2.0	✓ NEPM 1999 Sche	Schedule B(3) and ALS QCS3 requirement
EK028G	1 18	5.6	2.0	✓ NEPM 1999 Sche	Schedule B(3) and ALS QCS3 requirement
EK028G	1 13	7.7	2.0	NEPM 1999 Sche	Schedule B(3) and ALS QCS3 requirement
Motive Men	1 17	5.9	2.0	✓ NEPM 1999 Sche	Schedule B(3) and ALS QCS3 requirement
Mallix Opines (MS)					
Ammonia as N by Discrete analyser EK055G 1	1 20	5.0	2.0	ALS QCS3 requirement	ement
Chloride by Discrete Analyser ED045G 1	1 20	5.0	2.0	ALS QCS3 requirement	ement
	1 20	5.0	2.0	ALS QCS3 requirement	ement
P-MS - Suite A E0		5.0	2.0	ALS QCS3 requirement	ement
	1 20	5.0	2.0	ALS QCS3 requirement	ement
	1 20	5.0	2.0	ALS QCS3 requirement	ement
		5.0	2.0	ALS QCS3 requirement	ement
Nitrite and Nitrate as N (NOx) by Discrete Analyser		5.9	2.0	ALS QCS3 requirement	ement
Nitrite as N by Discrete Analyser EK057G	1 17	5.9	2.0	ALS QCS3 requirement	ement
Reactive Phosphorus as P-By Discrete Analyser 1	1 20	5.0	2.0	ALS QCS3 requirement	ement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	1 20	5.0	2.0	ALS QCS3 requirement	ement
screte Analyser	1 20	5.0	2.0	ALS QCS3 requirement	ement
TPH Volatiles/BTEX EP080	1 18	5.6	2.0	ALS QCS3 requirement	ement
Volatile Organic Compounds 1	1 13	7.7	2.0	ALS QCS3 requirement	ement
Weak Acid Dissociable Cyanide By Discrete Analyser	1 17	5.9	2.0	ALS QCS3 requirement	ement



Page : 9 of 13

Work Order : EM1104104 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 210074 ALBERT PARK GAS WORKS

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Нф	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	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 Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Chloride by Discrete Analyser	ED045G	WATER	APHA 21st ed., 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. in the presence of ferric ions the 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	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)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Hexavalent Chromium - Dissolved	EG050F	WATER	APHA 21st ed., 3500 Cr-B. Samples are 0.45 um filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Free CN by Discrete Analyser	EK025G	WATER	APHA 21st ed., 4500-CN-C&N Free Cyanide is determined on samples after distillation using a pyridine- barbituric acid colouring reagent followed with an Discrete Analyser finish. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Cyanide By Discrete Analyser	EK026G	WATER	APHA 21st ed., 4500-CN-C & N Total Cyanide is determined from aqueous solutions after distillation with sulphuric acid. The resultant distillate is then captured in a caustic absorber solution followed by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)



Page : 10 of 13

Work Order : EM104104 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 210074 ALBERT PARK GAS WORKS

Analytical Methods	Method	Matrix	Method Descriptions
Weak Acid Dissociable Cyanide By Discrete Analyser	EK028G	WATER	APHA 21st ed., 4500-CN-C&N WAD Cyanide is determined from aqueous solutions after distillation with acetic acid. The resultant distillate is then captured in a caustic absorber solution followed by Discrete Analyser. 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 Discrete 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 Analyser	EK058G	WATER	APHA 21st ed., 4500-NO3- F. Nitrate is reduced to nitrite by way of a cadmium reduction column 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 (NOx) by Discrete Analyser	EK059G	WATER	APHA 21st ed., 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	APHA 21st ed., 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with 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)
Sulfide as S2-	EK085	WATER	APHA 21st ed., 4500-S2- D Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. After the supernatant is discarded, the resultant precipitate is then coloured using methylene blue indicator and measured using UV-VIS detection at 664nm. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Ionic Balance by PCT DA and ICPAES	EN055 - PG	WATER	APHA 21st Ed. 1030F. The lonic 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 ICPAES. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Volatile Organic Compounds	EP074	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions



: 11 of 13 : EM1104104 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS

Page Work Order

Client Project

Preparation Methods	Method	Matrix	Method Descriptions
Free Cyanide	EK025-PR	WATER	APHA 21st ed., 4500 CN- C&N. The sample is distilled at natural pH. The CN is trapped in a caustic solution, and quanitified by colourimetry on FIA. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Cyanide	EK026-PR	WATER	APHA 21st ed., 4500 CN- C&N. The sample is distilled with H2SO4 releasing all bound cyanides as HCN. The CN is trapped in a caustic solution, and quanitified by colourimetry on FIA. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Weak Acid Dissociable Cyanide	EK028-PR	WATER	APHA 21st ed., 4500 CN- I&N. The sample is distilled with Acetic acid, selectively releasing the weakly bound metal cyanides as HCN. The CN is trapped in a caustic solution, and quanitified by colourimetry on FIA. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 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.



: ENVIRONMENTAL EARTH SCIENCES : 12 of 13

Summary of Outliers

Outliers: Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID Client Sample ID	Client Sample ID	Analyte	CAS Number Data	Data	Limits Comment	Comment
Laboratory Control Spike (LCS) Recoveries							
EP074E: Halogenated Aliphatic Compounds	2073992-011		Vinyl chloride	75-01-4 59.6 %	% 9.69	61-141%	Recovery less than lower control limit
EP074E: Halogenated Aliphatic Compounds	2073992-011		1.1-Dichloropropylene	563-58-6	122 %	74-122%	Recovery greater than upper control limit
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EM1104047-001	Anonymous	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined		MS recovery not determined, background level greater than or equal to 4x spike level.
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar EM1104076-001	EM1104076-001	Anonymous	Nitrite + Nitrate as N		Not Determined		MS recovery not determined, background level greater than or equal to 4x spike level.
EP074E: Halogenated Aliphatic Compounds	EM1104104-002	GW31	1.1-Dichloroethene	75-35-4	107 %	54-104%	Recovery greater than upper 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 Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: WATER

Method		Ex	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)		Date extracted	Date extracted Due for extraction	Days overdue	Date analysed	raction Days Date analysed Due for analysis overdue	Days overdue
EA005: pH							
Clear Plastic Bottle - Natural							
GW1,	GW31,	1	1	1	20-APR-2011	20-APR-2011 18-APR-2011	7
GW33,	GW34,						
GW35,	GW6						

Outliers: Frequency of Quality Control Samples

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

Matrix: WATER





Page : 13 of 13

Work Order : EM1104104 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 210074 ALBERT PARK GAS WORKS

Matrix: WATER

Actual Rate (%) Quality Control Specification Duplicates (DUP) 1 1 1 1 10 NFPM 1999 Schedule B/A	Quality Control Specification NFPM 1899 Schedule B/3) and Al S OCS3 requirement
---	--





Environmental Division

Amendment **Work Order**

i fvy Ry V. tPee

i saPvy

NEg Mol 999 ad NPD R. csPOX (L) d v. d/b WaQi WLa PacnIPD Pvy 4th Peylsson. dwittry: misPol J dvceytlshid_1-1 Evnnif vDPvy sou mmenfi vdMPsr f ctvP RING Bedz IsePvnninf (OND) 6F1jLj8T49@F08 6F1jLj8T4969F01 iltfsohlsed 16 3dL **CERTIFICATE OF ANALYSIS** bl rftll yftC YP\$77df vP Qi doPmPs if vy Ry al RenDraP V. . tPee EjDI 😘 **ENVIRONMENTAL EARTH SCIENCES** 5100-4d/bXEAYgVAKGVWh BAKW aBBYW AV, dJ WVPWYAVbJVC-011 MAQU VI JUGSVMEW @D Pez PPen@nw 6F1@L@F8- 1844 g CB CKB 2 cc5TL EM1104161 6F1c9F8- 1FFF

YdreotP7ftyoec7PteP. Peolv D7tPmifceotP7fty(e)o+nydoydreotP3tPvRPOAPecseo177sD yfoydPoelD7sP(e)oleoecrDnyP.OVso71: Peof30ydreotP7ftyodlmPorPPvoRIPRP.olv.ol77tfmP.o3t tPsPI ePO

L0jMV, j5011 19j Vg Aj 5011

ul yPoW D7sPeoAPRPmmP.

JeecPoul yP

9 9

Nf of 3tel D74PedPRPmP. Nf of 3sel D7sPed vI sCeP.

Ydreo PtysiR yPd 33/vl scenedif vy rveogdPdf sif + rv: ov 3 tDl yri v

ME/01T/11d L

Qcf yPovcDr Pt

n S

i jBji ovcDrPt Bt. PtovcDr Pt

W D7st

YP\$77df vP

EjDI rs

al RenDraP

gtf @RAy

- GPvPtl si f DDPvye
- VVI SONT SOF Pecse
- Wcttf: I yPo f vytf storiD rye

Š	>	_
<	NATA	>

Vovrete yp. obl rftll yft Cosst RAP. ny sní va PacniPD PryeO dnea f RCD Pvymenmec P. onvo I RRF t. I vRPo+ryddNVYVo

VRRP. IJP. OF LOW D7sh vRPot IJdo JMB/Ei ol-05TO

WORLD RECOGNISED ACCREDITATION

Ydneo. f ReD Pyyo dleor PPyo PSPRtf viring saco en vP. or Coydf tinn P. oen vl. yf timeo nv. nind yP. or Psf + Co EsPRytf virino en viv.: odleor PPyo R ttirP. of cyanoff D7sh vRPo+ nydo7tf RP. ctPece7PRSP. ovo510 aAgg1 tyd10 Signatories

MPsrfctvPolvft: I vnRe MPs f ctvPolvf t: I vnRe MPsrfctvPdBt: I vnRe MPsr f ctvPdBt: I vnRe Accreditation Category WPvriftdAPD mmits ynsPouveytcD PvyoidPD reey Wevriftalvft: I vnRoidPDrey WPvrfftdBt: I vrRoidPDrey blrftlyftOoifft. nvlyft Position unstymos PtvIv.f NI VROBI I V. HPtDI vdory 2 IV: r IV do IV Signatories

Environmental Division Melbourne Part of the ALS Laboratory Group

4th Pey sxA. dVFtiv: ml 4rd J o/ceytl sh d.1-1 Tel. +61-3-8549 9600 $\varpi l \times \varpi Frj Lj 8T49 \omega Fo 1 \varpi www.alsglobal.com$

A Campbell Brothers Limited Company



ENI JABNMENYVBÆVAYHOW ENI EW 5100-40/bXEAY@VAKGVWh BAKW EM11041F1d/DPv. DPvydl hftkabt. Pt i siPvy gtf @By

General Comments

YdPolvison Tifre ctPeocepor On Over the control of Prins 7P. of if RP. ct Red i POPD 7s CP. ovyodPol rePV RNS of i RD PvyP. only v. 1t. editor CASAPV of RocPeyO

h dPtPOD freyctPo PyPtDrvI yf vall ea PPvoMPt3tDP. ld Pecsed tPdP7ftyP. d vd o tOx Pn dyal ereO

h dRPd dP7f typ. ageegdl v(<)dPecsgreatin dPtydl vydPbb BAldydredD1 Gr Po cPgf d7thD1 tOzil D78Pdxyll Ry'n Pey yPo recyf vd v. // forvec3RPvyael D78Pdf td v1 sCareO

h dRPodPodPodBA & dP7ftP. dRecop and Becop and Day v. It. ob B Aldona DI On PocPojf and doff reyct you you you have 30 RP7ftP. CRP. or Purdy D7 ft. DI you want 30 RPV RPV

h d Noei D 7sm; on Drowst D 1 yi voocof yortim P. or Outbeats Prydel D 7sm; o 1 yeaf theed the of the office of the or D 2 with outbeat of the or D 2 with the or D 2 with the or D 3 with the

iVWWoCDFRee VWAR Brok Cocorprotation of the Poliny in Pia Coid Polinisation of the Manual Recorded the Month Soft Reported th bBAcedonDryd 3dP7f tyv: KPQ

^oddredPecsgoedfD7cyP. dafDav. mm.cl sovlsQPoPyRyfivedyaftorfmPodPaPnPsaf3dP7ftyw:

30/5/11: This report has been amended and re-released to allow the reporting of additional analytical data.

lonic Balance out of acceptable limits for EM1104161 #1 ,#2, #3, #6 and #10 due to analytes not quantified in this report.

lonic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.

lonic balances were calculated using: major anions - chloride, alkalinity, sulfate; and major cations - calcium, magnesium, potassium, sodium and ammonia for EM1104161 #3 and #10..



LG 3/1L EM11041F1d/DPv. DPv.yd ENI JABNMENYYbÆVAYHdVI ENI EW 5100-4d/bXEAY@VAKGVWh BAKW

gl:P hftkdBt.Pt

Analytical Results

ismPvy gtf@RAy

241.000.100

Worjmi yek: Water		Clie	Client sample ID	GW29	GW30	GW8	GW28	GW32
	Clie	ent samplin	Client sampling date / time	18jVgAj5011dT 00	19jVgAj5011dT 00	19jVgAj5011dT 00	19jVgAj5011dT00	19jVgAj5011dT 00
Compound	CAS Number	LOR	Unit	EM1104161-001	EM1104161-002	EM1104161-003	EM1104161-004	EM1104161-005
EA005: pH								
pH Value	iiii	000	7Hqp vny	7.22	7:37	6.27	7.65	69.7
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	GJW510j010	Τ	D: /b	2450	3050	2740	1540	1310
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	u MBj510j001	-	D: /b	_	\			>
Carbonate Alkalinity as CaCO3	L815jL5jF	-	D: /b	₹				\
Bicarbonate Alkalinity as CaCO3	- 1jT5jL	_	D: /b	469	431	228	367	574
Total Alkalinity as CaCO3	iiii	-	D: /b	469	431	228	367	574
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	y DA							
Sulfate as SO4 - Turbidimetric	14808j-9j8	-	D: /b	353	573	1510	167	216
ED045G: Chloride Discrete analyser								
Chloride	1F88-j00jF	-	D: /b	735	1020	290	332	41
ED093F: Dissolved Major Cations								
Calcium	- 440j-0j5	-	D: /b	22	88	130	30	131
Magnesium	- 4L9j 9Tj4	_	D: /b	26	83	20	26	63
Sodium	- 440j 5LjT	1	D: /b	602	733	173	351	73
Potassium	- 440j 09j-	1	D: /b	7	7	8	9	30
EG020F: Dissolved Metals by ICP-MS								
Aluminium	- 459j 90jT	0 0 1	D: /b	<0 @ 1	0.01	<0@1	<0@1	<0@1
Arsenic	- 440j L8j 5	0 0 01	D: /b	0.002	0.064	0.012	0.189	0.318
Cadmium	- 440j4Lj9	0@001	D: /b	<0 @ 001	<0@001	<0@001	<0@001	<0 @ 001
Cobalt	- 440j 48j 4	0 0 01	D: /b	0.005	0.007	0.006	<0 @ 01	<0@01
Copper	- 440j T0j8	0 0 01	D: /b	0.005	0.003	0.003	0.002	0.003
Lead	- 4L9j 95j 1	0 @ 01	D: /b	0.002	0.010	0.001	0.003	<0@01
Manganese	- 4L9j 9FjT	0 0 01	D: /b	0.403	0.434	1.35	0.170	0.176
Nickel	- 440j05j0	0 0 01	D: /b	0.008	0.005	0.066	0.014	0.002
Selenium	85j49j5	001	D: /b	<0 @ 1	<0 @ 1	<0@1	<0 0 1	<0 @ 1
Zinc	- 440j FFj F	T0 0 0	D: /b	0.021	0.017	0.052	<0 @ 01	9000
Boron	- 440j45j8	T 0 0	D: /b	0.46	0.44	0.91	0.74	0.83
Iron	- 4L9j 89j F	1 0 0	D: /b	∠00 >	<0 @ T	3.50	∠00 >	90.0
EG035F: Dissolved Mercury by FIMS								
Mercury	- 4L9j9- jF	0@001	D: /b	<0@001	<0 @ 001	<0@001	<0@001	<0@001
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18T40j59j9	0 0 1	D: /b	<0 @ 1	<0 @ 1	<0@1	<0 @ 1	<0 0 1
EK025G: Free cyanide by Discrete Analyser								
Free Cyanide	iiii	0000	D: /b	<0 @ 04	<0@04	<0@04	<0@04	9000
EK026G: Total Cyanide By Discrete Analyser	r .							
								A Campbell Brothers Limited Company



46 3/1L EM11041F1&DPV. DPvyd ENI JABNMENYVbŒVAYHØN ENI EW 5100- 4&/bXEAY®VAKGSVWh BAKW

gl:P hftkaBt.Pt

Analytical Results

isaPvy gtf@RAy of Doculto

WcrjMI ytx: WATER		Clie	Client sample ID	GW29	GW30	GW8	GW28	GW32
	Cli	ent samplin	Client sampling date / time	18jVgAj5011dIT 00	19jVgAj5011dT 00	19jVgAj5011dT 00	19jVgAj5011dT00	19jVgAj5011dT 00
Compound	CAS Number	LOR	Unit	EM1104161-001	EM1104161-002	EM1104161-003	EM1104161-004	EM1104161-005
EK026G: Total Cyanide By Discrete Analyser - Continued	- Continued							
Total Cyanide	T-j15jT	0000	D: /b	<0@04	<0000	0.014	0.033	0.226
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser	Discrete Ana	ılyser						
Weak Acid Dissociable Cyanide	iiii	0004	D: /b	<0@04	<0@04	<0000	<0@04	0.007
EK040P: Fluoride by PC Titrator								
Fluoride	1F984j48j8	00	D: /b	8.0	1.6	0.2	1.4	2.3
EK055G: Ammonia as N by Discrete Analyser	_							
Ammonia as N	- FF4j41j-	0001	D: /b	0.10	0.44	318	76.3	12.5
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	liili	0@1	D: /b	0.09	0.15	0.05	0.01	0.02
EK058G: Nitrate as N by Discrete Analyser								
^ Nitrate as N	14-9-jTTj8	0 0 1	D: /b	14.2	4.49	0.24	<0@1	1.67
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser	Discrete Anal	yser						
Nitrite + Nitrate as N	iiii	0 0 1	D: /b	14.3	4.64	0.28	<0@1	1.69
EK071G: Reactive Phosphorus as P by discrete analyser	ete analyser							
Reactive Phosphorus as P	ititi	0001	D: /b	<0@1	<0@1	<0@1	<0@1	<0@1
EK085M: Sulfide as S2-								
Sulfide as S2-	1849Fj 5Tj8	00	D: /b	<00	<0Q	©0>	©0>	<00>
EN055: Ionic Balance								
^ Total Anions	ijiji	0 0 1	D Pq/b	37.4	49.3	44.2	20.2	17.1
^ Total Cations	ijiji	0 0 1	D Pq/b	33.8	43.3	jjijj	19.0	15.7
Total Cations	ijiji	0001	D Pq/b	iiii	iiii	35.4	iiii	iiii
^ Ionic Balance	ijii	001	%	5.05	6.44	iiii	3.05	4.24
Ionic Balance	ijij	001	%	iiii	iiii	10.7	iiii	
EP074A: Monocyclic Aromatic Hydrocarbons	10							
Styrene	100j45jT	_	d/ :n	₽	ح		>	>
Isopropylbenzene	98j85j8	-	q/ :n	₽	₽	⊢	⊢	_≻
n-Propylbenzene	10Lj FTj 1	_	d/ :n	≺T				
1.3.5-Trimethylbenzene	108j F- j8	_	q/ :n	≺	>	>	>	>
sec-Butylbenzene	1LTJ 98j8	—	q/ :n			_≻		T>
1.2.4-Trimethylbenzene	9TjFLjF	-	q/ :rl	₽	L∨	_>	_>	_≻
tert-Butylbenzene	98j0FjF	_	d/ :rl			>		T>
p-IsopropyItoluene	99j8- jF	_	q/ :n	√T	>			
n-Butylbenzene	104jT1j8	_	d/ :n		_	_>	_>	_≻
EP074B: Oxygenated Compounds								
Vinyl Acetate	108j 0Tj 4	T0	q/ :rl	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><70</th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><70</th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><70</th></t0<></th></t0<>	<t0< th=""><th><70</th></t0<>	<70
2-Butanone (MEK)	- 8j9LjL	2	q/ :rl	<t0< th=""><th><t0< th=""><th>OT></th><th><70</th><th><70</th></t0<></th></t0<>	<t0< th=""><th>OT></th><th><70</th><th><70</th></t0<>	OT>	<70	<70



ENI JABNMENYVBÆVAYHOW ENI EW 5100-40/bXEAY@VAKGVWh BAKW EM11041F1d/DPv. DPvyd

h ftkaßt. Pt

Analytical Results

gtf @By i siPvy

19jVgAj5011dT 00 EM1104161-005 **GW32** 은 안 안 5 5 5 5 5 5 $\frac{1}{\sqrt{2}}$ Ļ ۱ ۲ F V Ļ. **⊢ ⊢** Ļ F V ۱- **₩** ا **⊢** Ļ Ļ Ļ Ļ Ļ Ļ Ļ $\frac{1}{\sqrt{2}}$ Ļ Ļ \vdash 19j Vg Aj 5011d T 00 EM1104161-004 **GW28** € £ \$ \$ \$ \$ \$ \$ ₽ ₩ $\frac{1}{\sqrt{2}}$ $\overline{}$ ∀ $\overline{}$ \ V ∀ **∀ ∀** ∀ ∀ ∀ \ V \vdash **∀ ∀** \vdash ∀ \vdash 19|VgA|5011dT 00 EM1104161-003 GW8 € £ 5 ₽ \ \vdash $\overline{\nabla}$ ₽ Ÿ Ÿ ∀ ∀ ∀ \vdash \vdash \vdash 19j Vg Aj 5011dT 00 EM1104161-002 5 7 \$ \$ \$ \$ \$ \$ **₩** ₽ ₽ \vdash ∀ ∀ $\overline{\nabla}$ \ V ∀ ∀ ∀ ∀ $\overline{\nabla}$ V ∀ ∀ Ÿ V V ∀ Ļ $\overline{}$ $\frac{1}{\sqrt{2}}$ ₽ $\frac{1}{\sqrt{2}}$ 18jVgAj5011dT 00 EM1104161-001 **GW29** ^ 5T0 £ £ 6 5 5 5 5 5 유 수 수 ∀ \ \ ₽ ₩ **∀ ∀ ∀ ∀ ∀ ∀**
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 ∀ **₩** ∀ ₽ ∀ ∀ Client sample ID Client sampling date / time q/ :n q/ :n q/ :n q/ :n q/ :n q/ :n q/ :н q/ :n q/ :rl q/ :n q/ :n q/ :n q/ :n q/ :n q/ :n q/ :rl q/ :n q/ :n q/ :rl q/ :n q/ :n q/ :n q/ :rl q/ :n Unit LOR 2 2 2222 은 TFJ5LJT - 9j01jF 108j 10j 1 T91j-8jF - Tj 1Tj0 Tj- 1j8 Tj01j4 - TjF9j4 - ТјСТј4 - TjL4jL TFLj T8j F - 4j9TjL CAS Number - Fj01j-- 8j8- jT 100F1j01jT 100F1j05jF 10FJ 9Lj 4 4j8Lj9 - TjoojL - 4j88j4 TFJ F0jT 1TFJ T9j5 - 1jTTJF 10-j0Fj5 - 9j00jT 145 58 9 15-j18j4 FLOj 50jF 110jT-jF 4- FJ11JT 9jL4jT 9Fj 18j4 9Fj15j8 T94j 50j-EP074B: Oxygenated Compounds - Continued EP074E: Halogenated Aliphatic Compounds **EP074C: Sulfonated Compounds** 4-Methyl-2-pentanone (MIBK) 1.2-Dibromo-3-chloropropane trans-1.3-Dichloropropylene trans-1.4-Dichloro-2-butene cis-1.3-Dichloropropylene 1.1.1.2-Tetrachloroethane 1.1.2.2-Tetrachloroethane 1.2-Dibromoethane (EDB) cis-1.4-Dichloro-2-butene Dichlorodifluoromethane trans-1.2-Dichloroethene Trichlorofluoromethane 1.2.3-Trichloropropane cis-1.2-Dichloroethene **EP074D: Fumigants** 1.1-Dichloropropylene 1.1.1-Trichloroethane Carbon Tetrachloride 1.1.2-Trichloroethane 2.2-Dichloropropane 1.2-Dichloropropane 1.3-Dichloropropane 1.1-Dichloroethene 1.1-Dichloroethane 1.2-Dichloroethane Pentachloroethane WcrjMl xrx: WATER Tetrachloroethene 2-Hexanone (MBK) Dibromomethane Carbon disulfide Trichloroethene Chloromethane **Bromomethane** Chloroethane Vinyl chloride lodomethane Compound

A Campbell Brothers Limited Compan



gl:P hftkaBt.Pt i siPvy gtf @RA

FØ 3ML EM11041F1d/DPv. DPv,pd ENI JBNMENYVbÆVAYHØW ENI EW 5100- 4Ø/bXEAY@VAKGSVWN BAKW

Analytical Results

			L					
WcrjMI ytx: WATER		Clie	Client sample ID	GW29	GW30	GW8	GW28	GW32
	Ö	ent samplin	Client sampling date / time	18jVgAj5011dlT 00	19j Vg Aj 5011dT 00	19jVgAj5011dT 00	19jVgAj5011dlT00	19jVgAj5011d/T 00
Compound	CAS Number	LOR	Unit	EM1104161-001	EM1104161-002	EM1104161-003	EM1104161-004	EM1104161-005
EP074E: Halogenated Aliphatic Compounds - Continued	. Continued							
Hexachlorobutadiene	8- jF8jL	_	q/ :n	₽	>	-	-	
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108j 90j-	_	q/ :n	₽	>	L		>
Bromobenzene	108j 8Fj 1	-	q/ :n	₽	⊢	⊢	⊢	_>
2-Chlorotoluene	9Tj49j8	-	q/ :n	₽	⊢	₽	₽	_>
4-Chlorotoluene	10Fj4Lj4	-	q/ :n	₽	T>	T>		_>
1.3-Dichlorobenzene	T41j-Lj1	-	q/ :n	₽	T>	T>	-	_>
1.4-Dichlorobenzene	10FJ4Fj-	-	q/ :n	₽	⊢	₽	Ļ	_>
1.2-Dichlorobenzene	9TjT0j1	-	q/ :n	₽	₽	₽	₽	L
1.2.4-Trichlorobenzene	150 85 1	_	q/ :n	₽	L	₽	₽	
1.2.3-Trichlorobenzene	8-jF1jF	-	q/ :n	₽	⊢	₽	Ļ	_>
EP074G: Trihalomethanes								
Chloroform	F-JFFJL	⊢	q/ :п	₽	₽	₽	₽	₽
Bromodichloromethane	- Tj5- j4	-	q/ :n	₽	⊢	⊢		_>
Dibromochloromethane	154j48j1	-	q/ :п	₽		_>		⊢ >
Bromoform	- Tj5Tj5	_	ф: /р		>			L>
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	rbons							
Naphthalene	91j50jL	10	q/ :rl	<10	~1 0	14.2	<10	<10
Acenaphthylene	508j 9Fj 8	10	d/ :n	<10	<10	<10	<10	<10
Acenaphthene	8LjL5j9	10	d/ :n	<10	<10	<10	<10	<10
Fluorene	8Fj-Lj-	10	d/ :n	<10	<10	<10	<10	<10
Phenanthrene	8Tj01j8	10	q/ :rl	<10	~1 0	<10	<10	<10
Anthracene	150j 15j-	10	d/ :n	<10	<10	<10	<10	<10
Fluoranthene	50Fj44j0	10	д: /р	<10	<10	<10	<10	<10
Pyrene	159j 00j 0	10	d/ :n	<10	<10	<10	<10	<10
Benz(a)anthracene	ТЕЈТТЈС	10	d/ :n	<10	<10	<10	<10	<10
Chrysene	518j01j9	10	d/ :n	<10	<1 @	<10	<10	<10
Benzo(b)fluoranthene	50TJ 99j 5	10	d/ :n	<10	<10	<10	<10	<10
Benzo(k)fluoranthene	6 j 0 g j 0 g j 0	10	q/ :n	<10	<10	<10	<10	<10
Benzo(a)pyrene	T0jL5j8	00	d/ :n		<0₫	<00	<0₫	<0₫
Indeno(1.2.3.cd)pyrene	19Lj L9j T	10	d/ :n	<10	<10	<10	<10	<10
Dibenz(a.h)anthracene	TLj-0jL	10	q/ :п	<10	<10	<10	<10	<10
Benzo(g.h.i)perylene	191j 54j 5	10	ф: /р	<10	<10	<10	<10	<10
^ Sum of polycyclic aromatic hydrocarbons	iiii	00	q/ :n	<1 0	^\ 0	14.2	×10	×10
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		20	q/ :π	<50	<50	20	<50	<50
C10 - C14 Fraction	iiii	10	q/ :n	<t0< td=""><td><t0< td=""><td>510</td><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td>510</td><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<>	510	<t0< td=""><td><t0< td=""></t0<></td></t0<>	<t0< td=""></t0<>
								:::::::::::::::::::::::::::::::::::::::

A Campbell Brothers Limited Company



ENI JABNMENYVBÆVAYHOW ENI EW 5100-40/bXEAY@VAKGVWh BAKW EM11041F1d/DPv. DPvyd

h ftkaßt. Pt

gtf @By i siPvy

Analytical Results

19jVgAj5011dT 00 EM1104161-005 **GW32** <100 <100 <100 5 5 5 <100 109 27.4 63.4 118 102 99.9 109 × 2 <5 × 2 γ γ γ γ Λ Ω γ 108 102 2 19j Vg Aj 5011dT 00 EM1104161-004 **GW28** ×100 ×100 <100 <T0 <T0 <100 <100 97.9 76.6 99.8 30.0 98.7 <50 <50 142 128 126 102 √ 5. ν ν υ Ÿ ∀ 19jVgAj5011dT 00 EM1104161-003 GW8 <100 66.2 97.5 1710 980 114 28.8 110 680 1660 122 128 100 103 8 3 4 2 7 7 18 4 19j Vg Aj 501 1dT 00 EM1104161-002 <100 <100 <100 <100 0 5 0 5 22.7 55.8 99.2 86.9 112 84.1 <50 <50 103 109 ₹ 5 V V Ÿ ∀ 18jVgAj5011dT 00 EM1104161-001 **GW29** <100 <100 <100 <50 <100 22.9 59.9 115 106 99.6 110 113 112 <50 109 111 5 \$ \frac{\cappa}{2} \frac{\cappa}{2} ∀ Client sample ID Client sampling date / time q/ :n q/ :rl q/ :n Unit % % % % % % % % % % % % LOR EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft 5 5 5 20 888 888 888 888 2 2 2 2 2 9Tj4- jF 91j50jL 1-19j0Fj8 1- 0F0j 0- j0 CAS Number ≔ - 1j4Lj5 100j 41j 4 108j L8j Ld 0Fj 45j L 1-0F0j 0-j0 50L-j5FjT 4F0j 00j4 1L15-j88jL 9L9T1j-LjF 118j-9jF L51jF0j8 1-18jT1j0 50L-j5FjT 4F0j 00j4 108j 88j L ILL0j 50j-≣ EP080/071: Total Petroleum Hydrocarbons - Continued EP075(SIM)S: Phenolic Compound Surrogates EP080S: TPH(V)/BTEX Surrogates C6 - C10 Fraction minus BTEX (F1) EP075(SIM)T: PAH Surrogates **EP074S: VOC Surrogates** ^ >C10 - C40 Fraction (sum) ^ C10 - C36 Fraction (sum) 4-Bromofluorobenzene 4-Bromofluorobenzene 1.2-Dichloroethane-D4 1.2-Dichloroethane-D4 2.4.6-Tribromophenol meta- & para-Xylene >C16 - C34 Fraction >C34 - C40 Fraction >C10 - C16 Fraction WcrjMl xrx: WATER 2-Chlorophenol-D4 C15 - C28 Fraction C29 - C36 Fraction C6 - C10 Fraction 2-Fluorobiphenyl **EP080: BTEXN** 4-Terphenyl-d14 Anthracene-d10 Total Xylenes A Sum of BTEX Ethylbenzene ortho-Xylene Naphthalene Toluene-D8 Compound Phenol-d6 Benzene Toluene



86 3/IL EM11041F10/DPV. DPvyd ENI JABNMENYYbœVAYHOW ENI EW 5100-40/bXEAY®VAKGSVWh BAKW

gl:P hftkdBt.Pt

isaPvy gtf@BAy

Analytical Results

Wcrj MI ytx: WATER		Ö	Client sample ID	GW38	DUP2	RINSATE 1	TRIP 2	GW37
	Cli	ent sampli	Client sampling date / time	19jVgAj5011dT 00	19jVgAj5011dT 00	18jVgAj5011dT 00	19jVgAj5011dT00	19jVgAj5011dT00
Compound	CAS Number	LOR	Unit	EM1104161-006	EM1104161-007	EM1104161-008	EM1104161-009	EM1104161-010
EA005: pH								
pH Value	iiii	0 0 1	7Hp vry	6.88	7.66	iiii	iii	7.06
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	GJW510j010	⊥	D: /b	3770	1600	iiii	iiii	2260
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	u MBj510j001	-	D: /b			iii		<u>۲</u>
Carbonate Alkalinity as CaCO3	L815jL5jF	-	D: /b	₹		iiii	iiii	<u>۲</u>
Bicarbonate Alkalinity as CaCO3	- 1jT5jL	-	D: /b	373	364	iiii	iiii	449
Total Alkalinity as CaCO3	iiii	_	D: /b	373	364	ijiji	iiii	449
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	DA							
Sulfate as SO4 - Turbidimetric	14808j - 9j8	1	D: /b	585	180	iiii	iiii	1060
ED045G: Chloride Discrete analyser								
Chloride	1F88-j00jF	-	D: /b	200	330		iiii	154
ED093F: Dissolved Major Cations								
Calcium	- 440j - 0j5	_	Q: /p	102	33		illi	29
Magnesium	- 4L9j9Tj4	_	D: /b	46	27	iįiį	iiii	37
Sodium	- 440j 5LjT	-	Q: /p	301	360	iiii	iiii	120
Potassium	- 440j 09j-	-	D: /b	13	9	iiii	iiii	6
EG020F: Dissolved Metals by ICP-MS								
Aluminium	- 459j 90j T	001	D: /b	<0@1	0.02	<0@1		<0@1
Arsenic	- 440j L8j5	00001	D: /b	0.034	0.201	<0@01		0.041
Cadmium	- 440j4Lj9	00001	D: /b	<0@001	<0@001	<0@001		<0@001
Cobalt	- 440j 48j 4	00001	D: /b	0.002	<0@01	<0@01		0.003
Copper	- 440j T0j8	00001	D: /b	0.003	0.001	<0@01		0.002
Lead	- 4L9j95j1	00001	D: /b	0.004	0.004	<0@01		<0@01
Manganese	- 4L9j9FjT	00001	D: /b	1.08	0.169	<0@01		0.298
Nickel	- 440j 05j 0	00001	Q: /p	0.283	0.010	<0@01	iiii	0.008
Selenium	85j 49j 5	0001	D: /b	<0@1	<0@1	<0@1		<0@1
Zinc	- 440j FFj F	T0 0 0	D: /b	0.014	0.005	±0 0 0>	ijiji	0.010
Boron	- 440j 45j8	1 0 0	D: /b	96.0	0.78	<0 @ T	iiii	0.71
Iron	- 4L9j 89jF	1 0 0	D: /b	<0 @ T	<0 @ T	<0 @ T	iiii	0.23
EG035F: Dissolved Mercury by FIMS								
Mercury	- 4L9j 9- jF	00001	D: /b	<0@001	<0@001	<0@001		<0@001
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18T40j 59j9	0 0 1	D: /b	<0 @ 1	<0 @ 1	<0@1	iiii	<0@1
EK025G: Free cyanide by Discrete Analyser								
Free Cyanide	iiii	0000	D: /b	0.010	<0@04	<0@04	iiii	<0@04
EK026G: Total Cyanide By Discrete Analyser								

A Campbell Brothers Limited Company



96 3/1L EM11041F10/DPV. DPvyd ENI JABNMENYVbÆVAYHOW ENI EW 5100-40/bXEAY®VAKGVWN BAKW

gl:P hftkdBt.Pt i siPvy gtf (@R) Analytical Results

			_					
WcrjMI ytm: WATER		Clier	Client sample ID	GW38	DUP2	RINSATE 1	TRIP 2	GW37
	Clier	nt sampling	Client sampling date / time	19jVgAj5011dT 00	19jVgAj5011dT 00	18jVgAj5011dT 00	19jVgAj5011dT00	19jVgAj5011d/T 00
Compound	CAS Number	LOR	Unit	EM1104161-006	EM1104161-007	EM1104161-008	EM1104161-009	EM1104161-010
EK026G: Total Cyanide By Discrete Analyser - Continued	er - Continued							
Total Cyanide	_	0000	D: /b	0.055	0.032	<0 0 04		0.390
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser	y Discrete Anal	yser						
Weak Acid Dissociable Cyanide	iiii	0000	D: /b	0.013	<0000	<0004		0.005
EK040P: Fluoride by PC Titrator								
Fluoride	1F984j48j8	00	D: /b	0.7	1.4	iiii	iiii	1.1
EK055G: Ammonia as N by Discrete Analyser	ser							
Ammonia as N	- FF4j 41j-	0@1	D: /b	511	87.7	ijiji	iiii	358
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	liiii	0@1	D: /b	0.13	0.11	ijij	iiii	0.44
EK058G: Nitrate as N by Discrete Analyser								
^ Nitrate as N	14-9-jTTj8	0 0 1	D: /b	90:0	<0 0 1	ÜÜ	iiii	0.47
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser	Discrete Analy	ser						
Nitrite + Nitrate as N	iiii	000	D: /b	0.19	<0 0 1	IIII	iiii	06.0
EK071G: Reactive Phosphorus as P by discrete analyser	crete analyser							
Reactive Phosphorus as P	liiii	0001	D: /b	<0@1	<0 @ 1	IIII		<0@1
EK085M: Sulfide as S2-								
Sulfide as S2-	1849Fj5Tj8	00	D: /b	<00	<00	<00	ijiji	<00>
EN055: Ionic Balance								
^ Total Anions	iiii	0 0 1	D Pq/b	25.3	20.4	ijiji	ijiji	35.5
^ Total Cations	iiiii	001	DPq/b	22.3	19.7	ijiji	iiii	iiii
Total Cations	iiii	0 0 1	DPq/b	iiij	ijiji	ijiji	ijiji	31.6
^ Ionic Balance	iiii	001	%	6.25	1.68	iiii	iiii	iiii
Ionic Balance	iiii	001	%	iiii	iiii	iiii	iiii	6.11
EP074A: Monocyclic Aromatic Hydrocarbons	ns							
Styrene	100j 45jT	_	q/ :n	_>	⊢	_	⊢	⊢ ∨
Isopropylbenzene	98j85j8	—	q/ : rl	_>	⊢	-	⊢	F^
n-Propylbenzene	10Lj FTj 1	-	q/ :n	_>	⊢	⊢	_	T>
1.3.5-Trimethylbenzene	108j F- j8	-	q/ :n	-	⊢	⊢		T>
sec-Butylbenzene	1LTJ 98J8	-	q/ :n	_≻	⊢	⊢	_	T>
1.2.4-Trimethylbenzene	9TJFLJF	-	q/ :n	_>	⊢	⊢	_	T>
tert-Butylbenzene	98j0FjF	-	q/ :n	_>	⊢	_>	⊢	T>
p-Isopropyltoluene	99j8- jF	-	q/ : rl	_>	⊢	-	⊢	F^
n-Butylbenzene	104j T1j8	_	d/ :rl	_≻	Ţ	₽	₽	⊢
EP074B: Oxygenated Compounds								
Vinyl Acetate	108ј 0Тј 4	T0	ф: /р	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
2-Butanone (MEK)	- 8j9LjL	2	ф: /р	<70	<t0< th=""><th>OT></th><th><t0< th=""><th><Т0</th></t0<></th></t0<>	OT>	<t0< th=""><th><Т0</th></t0<>	<Т0



106 3/IL EM11041F1d/DPV. DPvyd ENI JABNMENYVbŒVAYHOW ENI EW 5100-4d/bXEAY®VAKGSVWh BAKW

gl:P hftkaBt.Pt

Analytical Results

isaPvy gtf@BAy Doculto

WcrjMI ytx: WATER		Clie	Client sample ID	GW38	DUP2	RINSATE 1	TRIP 2	GW37
	CI	ent samplii	Client sampling date / time	19jVgAj5011dT 00	19j Vg Aj 5011dT 00	18jVgAj5011dT 00	19jVgAj5011dT00	19jVgAj5011dT 00
Compound	CAS Number	LOR	Unit	EM1104161-006	EM1104161-007	EM1104161-008	EM1104161-009	EM1104161-010
EP074B: Oxygenated Compounds - Continued	inued							
4-Methyl-2-pentanone (MIBK)	108j 10j 1	T0	q/ :rl	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
2-Hexanone (MBK)	T91j-8jF	TO	q/ :n	<70	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
EP074C: Sulfonated Compounds								
Carbon disulfide	- Tj1Tj0	⊢	q/ :rl	_>	_>	>	_>	>
EP074D: Fumigants								
2.2-Dichloropropane	T94j 50j-	-	q/ :rl	₽	₽	⊢	₽	
1.2-Dichloropropane	Ti-8j8-	_	q/ :n	⊢	₽	₽	₽	-
cis-1.3-Dichloropropylene	100F1j01jT	_	d/ :n	-	₽	⊢	₽	
trans-1.3-Dichloropropylene	100F1j05jF	_	q/ :n	⊢	₽	L	₽	⊢
1.2-Dibromoethane (EDB)	10FJ9Lj4	F	q/ :n	_>	-	_>	⊢	
EP074E: Halogenated Aliphatic Compounds	spui							
Dichlorodifluoromethane	- Tj- 1j8	T0	q/ :rl	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Chloromethane	-4j8-jL	T0	q/ :n	<t0< th=""><th><70</th><th>OT></th><th><70</th><th><t0< th=""></t0<></th></t0<>	<70	OT>	<70	<t0< th=""></t0<>
Vinyl chloride	- Tj01j4	T0	q/ :n	<t0< th=""><th><70</th><th>OT></th><th><70</th><th><t0< th=""></t0<></th></t0<>	<70	OT>	<70	<t0< th=""></t0<>
Bromomethane	- 4j8Lj9	T0	q/ :n	<t0< th=""><th><70</th><th>OT></th><th><70</th><th><t0< th=""></t0<></th></t0<>	<70	OT>	<70	<t0< th=""></t0<>
Chloroethane	- Tj00jL	T0	q/ :n	<t0< th=""><th><70</th><th>OT></th><th><70</th><th><t0< th=""></t0<></th></t0<>	<70	OT>	<70	<t0< th=""></t0<>
Trichlorofluoromethane	- TjF9j4	T0	q/ :n	<t0< th=""><th><70</th><th>OT></th><th><70</th><th><t0< th=""></t0<></th></t0<>	<70	OT>	<70	<t0< th=""></t0<>
1.1-Dichloroethene	- TJLTJ4	_	q/ :n	>	>	>	_>	>
lodomethane	- 4j88j4	-	q/ :n	⊢	⊢ >	_>	⊢	⊢
trans-1.2-Dichloroethene	1TFJ F0JT	F	q/ :n	_>	-	_>	⊢	
1.1-Dichloroethane	- TJL4jL	⊢	q/ :n	⊢	⊢	_>	⊢	-
cis-1.2-Dichloroethene	1TFJ T9J5	-	q/ :n	⊢	⊢	_>	⊢	⊢
1.1.1-Trichloroethane	- 1jTTJF	-	q/ :n	_	_	>	_>	-
1.1-Dichloropropylene	TFLj T8j F	-	q/ :n	_	_>	_>	⊢	
Carbon Tetrachloride	TFJ5LJT	⊢	q/ :n	⊢	⊢	_>	⊢	-
1.2-Dichloroethane	10-j0Fj5	-	q/ :n	_	_	_>	_>	-
Trichloroethene	- 9j01jF	-	q/ :n	_	_>	>	_>	
Dibromomethane	- 4j9TjL	_	q/ :rl	_	_>	_>	_>	
1.1.2-Trichloroethane	Tj00je -	-	q/ :n	⊢	_	_>	_>	-
1.3-Dichloropropane	145j 58j 9	-	q/ :n	_	L ≻	>	>	Τ>
Tetrachloroethene	15- j 18j4	_	q/ :n	>	_>	>	_>	>
1.1.1.2-Tetrachloroethane	FL0j50jF	F	q/ :n	_	>	T>	>	T>
trans-1.4-Dichloro-2-butene	110JT- JF	-	q/ :n	_	L >	>	>	Τ>
cis-1.4-Dichloro-2-butene	14- FJ11JT	-	q/ :rl	⊢	_>	_>	⊢ >	_
1.1.2.2-Tetrachloroethane	- 9jL4jT	_	d/ :rl	۲>	_>	>	_>	>
1.2.3-Trichloropropane	9Fj18j4	⊢	d/ :n		>	>	_>	T>
Pentachloroethane	- Fj01j-	-	q/ :n	_≻	⊢ ∨	_≻	⊢ ∨	>
1.2-Dibromo-3-chloropropane	9Fj15j8	_	d/ :rl	Τ>	_>		_>	>



ENI JABNMENYVBÆVAYHOW ENI EW 5100-40/bXEAY@VAKGVWh BAKW EM11041F1&DPv. DPvyd

h ftkabt. Pt

gtf @By i siPvy

Analytical Results

19jVgAj5011dT 00 EM1104161-010 **GW37** 410 4 6 6 6 410 4 410 410 410 410 ₩ V 410 \vdash F V ⊢ V | **∀ ∀ ⊢** ⊢ v Ļ $\frac{1}{\sqrt{2}}$ ⊢ V ⊢ v Ļ 5.7 9 19j Vg Aj 5011dT 00 EM1104161-009 **TRIP 2** 4 4 4 4 ×10 ⊕0> <50 <70 <70 $\overline{}$ **₩** ∀ ∀ ₽ ∀ **∀ ∀** ∀ 18jVgAj5011dT00 EM1104161-008 RINSATE 1 ×10 ۸ 10 ×10 410 , 0 ۸ 10 ۰ 10 ۰ 10 O0> ۰ 10 ۸ 10 <50 <u>د</u> ∀ $\overline{}$ \rightarrow \righ ∀ ∀ ∀ **∀ ∀** 19j Vg Aj 5011dT 00 EM1104161-007 ×10 ×10 ×10 ×10 ×10 ×10 ۸ 1 × 10 ×10 ×10 ×10 Ŷ0Ġ ^ 10 ×10 <50 <T0 **₩** $\overline{\nabla}$ ∀ V ∀ V ∀ Ÿ $\overline{}$ V \ V ∀ 19jVgAj5011dT 00 EM1104161-006 GW38 3370 ×10 ×10 ×16 ×10 ×10 ~1**0** ^ 10 ×10 ×10 ~1**0** ×10 \$0Q ×10 40 $\overline{\nabla}$ **₩ ∀ ∀** Ļ. **₩** $\overline{\nabla}$ **∀ ∀** ∀ \vdash Client sample ID Client sampling date / time d/ : n q/ :н q/ :n q/ :n q/ :n q/ :n q/ :н q/ :n q/ :n q/ :n q/ :rl q/ :n q/ :n q/ :n q/ :n q/ :rl q/ :n q/ :n q/ :rl q/ :n q/ :n q/ :rl q/ :n q/ :n q/ :н q/ :n q/ :n Unit LOR 6 9 6 6 6 20 50Fj44j0 8- jF8jL 9Tj49j8 150j 85j 1 8-jF1jF F- JFFJL - Тј5Тј5 8Tj01j8 8Fj-Lj-19Lj L9j T TLj-0jL CAS Number 108j 90j-10FJ4Lj4 T41j-Lj1 10FJ4Fj-9TjT0j1 - Tj5- j4 154j48j1 91j50jL 508j 9Fj 8 8LjL5j9 159,000,0 TFJTTJL 518j01j9 50TJ 99J 5 50-j08j9 T0jL5j8 191j 54j 5 ⊞⊞ 108j 8Fj 1 150j 15j-EP074E: Halogenated Aliphatic Compounds - Continued EP075(SIM)B: Polynuclear Aromatic Hydrocarbons EP074F: Halogenated Aromatic Compounds EP080/071: Total Petroleum Hydrocarbons EP074G: Trihalomethanes ^ Sum of polycyclic aromatic Bromodichloromethane Dibromochloromethane 1.2.3-Trichlorobenzene 1.2.4-Trichlorobenzene Indeno(1.2.3.cd)pyrene Dibenz(a.h)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Hexachlorobutadiene Benzo(g.h.i)perylene 1.3-Dichlorobenzene 1.4-Dichlorobenzene 1.2-Dichlorobenzene WcrjMl yrx: WATER Benz(a)anthracene hydrocarbons C10 - C14 Fraction 4-Chlorotoluene 2-Chlorotoluene C6 - C9 Fraction Acenaphthylene Benzo(a)pyrene Bromobenzene Chlorobenzene Acenaphthene Phenanthrene Fluoranthene Naphthalene Anthracene Chloroform Bromoform Compound Chrysene Fluorene

A Campbell Brothers Limited Compan



156 31L EM11041F1d/DPv. DPv.jd ENI JABNMENYVbÆVAYHOW ENI EW 5100-40/bXEAY®VAKGVWh BAKW

gl:P hftkaBt.Pt i siPvy gtf (@R)

Analytical Results

WcrjMl ¢ix: WATER		Ö	Client sample ID	GW38	DUP2	RINSATE 1	TRIP 2	GW37
	Cli	ent samplii	Client sampling date / time	19jVgAj5011dIT 00	19j Vg Aj 5011dT 00	18jVgAj5011dT 00	19jVgAj5011d/T00	19jVgAj5011dT 00
Compound	CAS Number	LOR	Unit	EM1104161-006	EM1104161-007	EM1104161-008	EM1104161-009	EM1104161-010
EP080/071: Total Petroleum Hydrocarbons - Continued	s - Continued							
C15 - C28 Fraction		100	q/ :rl	1850	<100	<100	<100	1330
C29 - C36 Fraction	iiii	T0	q/ :rl	130	<t0< th=""><th>oT></th><th><t0< th=""><th>09</th></t0<></th></t0<>	oT>	<t0< th=""><th>09</th></t0<>	09
^ C10 - C36 Fraction (sum)	iiii	T0	q/ :rl	5350	<t0< th=""><th><t0< th=""><th><t0< th=""><th>2000</th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th>2000</th></t0<></th></t0<>	<t0< th=""><th>2000</th></t0<>	2000
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft	ons - NEPM 201) Draft						
C6 - C10 Fraction	iiii	20	q/ :rl	40	<50	<50	<50	09
^ C6 - C10 Fraction minus BTEX (F1)	iiii	20	q/ :rl	<50	<50	<50	<50	<50
>C10 - C16 Fraction	iiii	100	q/ :rl	3590	<100	<100	<100	880
>C16 - C34 Fraction	iiii	100	q/ :rl	1580	<100	<100	<100	1110
>C34 - C40 Fraction	iiii	100	q/ :rl	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	iiii	100	q/ :rl	5170	<100	<100	<100	1990
EP080: BTEXN								
Benzene	- 1j4Lj5	-	q/ :rl	27	\ <u>\</u>	₹	\	42
Toluene	108j 88jL	2	q/ :rl	10	<5	<5	<5	12
Ethylbenzene	100j41j4	2	q/ :rl	<5	<5	<5	<5	<5
meta- & para-Xylene	108j L8j Ldi 0Fj 45j L	22	q/ :rl	4	<5	<5	~ 5	5
ortho-Xylene	9Tj4- jF	2	q/ :rl	3	<5	<5	<5	ဗ
^ Total Xylenes	1LL0j 50j-	2	q/ :rl	7	<5	<5	<5	8
^ Sum of BTEX	iiii	-	q/ :rl	44		₹	7	62
Naphthalene	91j50jL	Τ	d/ :rl	28	>	L	₽	40
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	1- 0F0j 0- j0	00	%	105	101	105	100	125
Toluene-D8	50L-j5FjT	00	%	104	104	104	101	125
4-Bromofluorobenzene	4F0j 00j4	00	%	112	102	108	103	114
EP075(SIM)S: Phenolic Compound Surrogates	gates							
Phenol-d6	1L15-j88jL	00	%	28.1	11.5	23.2	27.1	22.0
2-Chlorophenol-D4	9L9T1j-LjF	00	%	65.0	20.4	47.9	63.8	60.1
2.4.6-Tribromophenol	118j-9jF	00	%	142	129	70.1	106	136
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	L51jF0j8	00	%	111	81.1	89.0	100	119
Anthracene-d10	1- 19j 0Fj 8	00	%	106	112	62.7	95.3	105
4-Terphenyl-d14	1-18jT1j0	00	%	97.1	115	68.7	102	98.4
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	1- 0F0j 0- j0	00	%	91.2	106	111	105	110
Toluene-D8	50L-j5FjT	00	%	90.3	108	108	104	108
4-Bromofluorobenzene	4F0j 00j4	00	%	94.4	105	107	104	114





1L6 31L EM11041F10/DPv. DPv.yd ENI JABNMENYVbÆVAYHOVI ENI EW 5100-40/bXEAY@VAKGVWN BAKW

gl:P hftkdBt.Pt isaPvy gtf@BVy

Surrogate Control Limits

WcrjMI ytn: WATER		Recovery Limits (%)	Limits (%)
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	1- 0F0j 0- j0	- 5	1L5
Toluene-D8	50L-j5FjT	- 4	158
4-Bromofluorobenzene	4F0j 00j4	0 -	1L5
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	1L15-j88jL	10	Т8
2-Chlorophenol-D4	9L9T1j-LjF	10	154
2.4.6-Tribromophenol	118j-9jF	5F	1L8
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	L51jF0j8	L5	155
Anthracene-d10	1- 19j0Fj8	L4	1LF
4-Terphenyl-d14	1-18jT1j0	L4	140
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	1- 0F0j 0- j0	7-	1L1
Toluene-D8	50L-j5FjT	-5	154
4-Bromofluorobenzene	4F0j 00j4	0 -	15F

CHAIN OF CUSTODY

ALS Laboratory: please tick >

☐ Newcastle: 5 Rosegum Rd, Warabook NSW 2304 Ph.02, 4966 9433 E-aumptes newcastle@atsanviro.com CI Sydney, 277 Woodpark Rd, Smithfield NSW 2176 Ph. 02 8784 8555 E samples nythey@alastwice.com

☐ Townsville: 14-15 Dasma Ct, Boths QLD 4618 Ph.07 4796 0600 E: bounsville environmental@ailannero.com El Brisbane 32 Shand St, Stefford QLD 4053 Pr.07 3243 7222 Esamples brisbane@alsenviro

Malbourne 2-4 Westell RG. Springvale VIG 3171
Ph.03 8249 9000 E. semiples melbourne@alsonvio.com
 Adelaide: 2-7 Burne RG. Foorake SA 5096
Ph. 08 3559 0890 Earlounde@alsonvio.com
 Ph. 08 3559 0890 Earlounde@alsonvio.com

Li Peath. 10 Hod Way, Malega WA 6020. Ft. 0.8 02075 455E. Esamples, pertigibilent vio com. D. Lauroeston: ZTWellington St. Leuroeston TAS 7250. Ph. 03 6381 2158. E. leuroestonigetsentva.com.

② ₹ Please forward SPLIT2 to SGS Australia Pty Ltd with copy of RESTRETAN Additional Information Coburg Vic 3058) (34 Norfolk Court churt Conol DATETIME 8 FOR LABORATORY USE ONLY (Circle) indom Sample Temperature on Receipt. asper ozen ice bricks pre ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) 17.70 19,60 19.20 19.80 19.00 18.00 19.80 19.80 RELINQUISHED BY Sample Temp Where Metals are required, specify Total (unifitered bottle required) or Dissolved (field filtered bottle required) 7.74 7.69 7.74 7.74 7.39 6.28 6.97 DATE/TIME: Sample Ph Sulphide cyanide, × × Free Cyanide, Total cyanide, WAD TPH/BTEX/PAH Plus VOC × × × × × × W-10 Package -× × × × Hexavalent Chromium × × × × COC SEQUENCE NUMBER (Circle from red/green metals bottle) Dissolved metals - Al, As, Cd, Cu Fe, Pb, Ni, Zn, Co, Se, B, Mn & Hg (leb to contribute, filter and acidify × × × × × × NH4 - Ammonium - (field pH and field femperature must be recorded) × × × 4 01 4 01 Reactive P RECEIVED BY: × × × × × 01 1 2 3 ИТ-3 Раскаде - ИО2, ИО3, FI, 3 DATE/TIME: 1 2 Non Standard or urgent TAT (List due date): NT-2 Package - CI, SO4, AIK × × × × × 8 NT-1 package - Ca, Mg, Na, K × × × × × × Standard TAT (List due date) DATE/TIME: 19/4/2011 3:30pm Sulphide WAD cyanide, × × × × pH, TDS, Free Cyanide, Total cyanide, TOTAL RELINQUISHED BY: 11 60 00 00 w 0 œ 8 œ 1 m TOTAL CONTAINER INFORMATION TYPE & PRESERVATIVE (refer to codes below) Telephone: +61-3-8549 9600 **Environmental Division** EM1104161 (Standard TAT may be longer for some tests e.g., Ultra Trace Organics) TURNAROUND REQUIREMENTS: ALS QUOTE NO.: ME/015/11 V3 EDD FORMAT (or default): ENMRG & ESDAT SC Work Order Melbourne SAMPLER MOBILE: 0437 033 796 CONTACT PH: 0403 033 796 MATRIX DATE / TIME 18/04/2011 19/04/2011 19/04/2011 19/04/2011 19/04/2011 19/04/2011 19/04/2011 19/04/2011 18/04/2011 18/04/2011 19/04/2011 SAMPLE DETAILS MATRIX: Solid(S) Water(W) Email Reports to (will default to PM if no other addresses are listed): Email Invoice to (will default to PM if no other addresses are listed) COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: OFFICE: P.O.BOX 2253, FOOTSCRAY, VIC, 3011 PROJECT: 210074 ALBERT PARK GAS WORKS SAMPLE ID CLIENT: Environmental Earth Sciences PROJECT MANAGER: DAVID JAMES COC emailed to ALS? (YES / NO) RINSATE 1 SPUT 2 TRIP 1 TRIP 2 **GW28 GW32 GW38** DUPZ GW30 GW8 ALS USE ONLY 3 t S NOT FECULTED ORDER NUMBER: 00 σ LAB ID SAMPLER: 200

Watel Container Codes: F = Unpreserved Plastic: N = Native Preserved Plastic: ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Plastic: AD = Amber Glass Unpreserved Plastic: N = Native Preserved Plastic: F = Formaldehyde Preserved Glass: N = HCI preserved Plastic; HS = HCI preserved Speciation bottle; SP = Suffuric Preserved Plastic: F = Formaldehyde Preserved Glass: A = HCI preserved Speciation bottle; SP = Suffuric Preserved Plastic: F = Formaldehyde Preserved Glass: A = HCI preserved Speciation bottle; SP = Suffuric Preserved Plastic: F = Formaldehyde Preserved Glass: A = EDTA Preserved Plastic: SP = Suffuric Preserved Plastic: B = Formaldehyde Preserved Glass: A = EDTA Preserved Plastic: SP = Suffuric Preserved Plastic: F = Formaldehyde Preserved Glass: A = EDTA Preserved Plastic: SP = Suffuric Preserved Plastic: F = Formaldehyde Preserved Glass: A = EDTA Preserved Plastic: SP = Suffuric Preserved Plastic: F = Formaldehyde Preserved Glass: A = EDTA Preserved Plastic: SP = Suffuric Preserved Plastic: F = Formaldehyde Preserved Plastic: A = EDTA Preserved Plastic: B = 56.6 12/4/61 te co 00





Environmental Division

QUALITY CONTROL REPORT

Work Order	: EM11041A1	Page	: 1 of 16
mm et dn et N	Γ.		
Client	: EVI R'OVMEVLMH EMTLS C5/EV5EC	Laboratory	: Environmental Division Melbourne
Address	P.O.BOX 2253 FOOTSCRAY VIC, AUSTRALIA 3011	Address	4 Westall Rd Springvale VIC Australia 3171
E-mail Telephone Facsimile	: djames@eesi.biz : +61 96871666 : +61 03 96871844	E-mail Telephone Facsimile	: carol.walsh@alsenviro.com : +61-3-8549 9608 : +61-3-8549 9601
Project Site	: 210074 ALBERT PARK GASWORKS	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 require
C-O-C number		Date Samples Received	: 19-APR-2011
Sampler	: DJ	Issue Date	: 30-MAY-2011
Order number	1		
-		No. of samples received	
Quote number	: ME/015/11 V3	No. of samples analysed	: 10

rement

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

This Quality Control Report contains the following information:

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



NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

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

carried out in compnance with pr	called out in compliance with procedures specified in 21 OFN Part 11.	
Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Herman Lin	Laboratory Coordinator	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics
Xingbin Lin	Senior Organic Chemist	Melbourne Organics



Work Order : EM1104161 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 210074 ALBERT PARK GASWORKS

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 insuffient 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.

Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot Key:

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

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC





: 3 of 16 : EM1104161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GASWORKS Work Order Project Client

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%.

Method: Compound Method: Compound Endots sample ID Method: Compound Endots (S. Q.S. Hol 18p) Ap) a Endots (S. D. Holl) Anonymous EA005: pH Value Endots (S. D. Holl) Anonymous EA015H: Total Dissolved Solids @180°C EM1104121-010 Anonymous EA015H: Total Dissolved Solids @180°C EM1104121-010 Anonymous EA015H: Total Dissolved Solids @180°C EM1104121-010 Anonymous EA015H: Total Dissolved Solids @180°C EM1104121-001 Anonymous EA015H: Total Dissolved Solids @180°C EM1104121-001 Anonymous ED037-P: Hydroxide Alkalinity as CaCO3 ED037-P: Carbonate Alkalinity as CaCO3 ED037-P: Hydroxide Alkalinity as CaCO3 EM1104121-001 Anonymous ED045: Chloride ED037-P: Calcium ED037-P: Magnesium ED037-P: Magnesium ED037-P: Magnesium ED037-P: Magnesium ED037-P: Magnesium EM1104161-001 GW29 ED037-P: Calcium ED037-P: Calcium EM104161-001 GW29 ED037-P: Calcium EG0204-P: Cacdium EG0204-P: Cacdium EG0204-P: Cacdium EG0204-P: Cacdium EG0207-P: Cacdium	Tal www.vitew.dus		Our Matrix: Wm ET				Laboratory Di	Laboratory Duplicate (DUP) Report		
us Q 5 HoN 18p)) 4a us us ws us us us us us us us us us u			od: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
	00p: (S Q 5 HoN 18p) Ap) a									
		EA00)5: pH Value	-	0.01	pH Unit	7.74	7.73	0.1	0% - 20%
		EA00;)5: pH Value		0.01	pH Unit	6.99	6.75	3.5	0% - 20%
EM1104121-001 Anonymous EA015H: Total Dissolved Solids @180°C	01p: LoN Di svoßed Coßdv Q 5	5 HoN 18p)))4a								
EM1104121-010 Anonymous EA015H: Total Dissolved Solids @180°C Ei 038P: ntl it sty by P5 Lsti lbr d 5 HoN 18p) A09a ED037-P: Hydroxide Alkalinity as CaCO3 ED037-P: Carbonate Alkalinity as CaCO3 ED037-P: Total Alkalinity as CaCO3 ED0412-1-001 Anonymous ED041G: Sulfate as SO4 - Turbidimetric EM1104121-009 Anonymous ED045G: Chloride EM1104121-001 Anonymous ED045G: Chloride EM1104121-001 Anonymous ED093F: Magnesium ED093F: Magnesium EM1104161-001 GW29 ED093F: Potassium ED093F: Alkalinity as CaCO3 ED020A-F: Arsenic EG020A-F: Cadmium EG020A-F: Arsenic EG020A-F: Arseni		EA01	15H: Total Dissolved Solids @180°C	GIS-210-010	2	mg/L	2930	2850	2.8	0% - 20%
EM1104161-001		EA01:	15H: Total Dissolved Solids @180°C	GIS-210-010	2	mg/L	<5	<5	0.0	No Limit
EM1104160-004 Anonymous ED037-P: Hydroxide Alkalinity as CaCO3	038P: mDkl Det sty by P5 Lstvil Nor (Q 5 HoN 18p) A09a								
ED037-P: Carbonate Alkalinity as CaCO3	11104160-004 Anonymous	ED03	37-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	-	mg/L	1>	1 >	0.0	No Limit
ED037-P: Bicarbonate Alkalinity as CaCO3		ED03	37-P: Carbonate Alkalinity as CaCO3	3812-32-6	_	mg/L	<u>\</u>	<u>^</u>	0.0	No Limit
EM104161-010 GW37 ED037-P: Total Alkalinity as CaCO3		ED03	37-P: Bicarbonate Alkalinity as CaCO3	71-52-3	_	mg/L	1500	1450	3.4	0% - 20%
EM1104161-010 GW37 ED037-P: Hydroxide Alkalinity as CaC03 EI 041G: Cutil Ne Qurbsdan eMszdal v CO4 92by i m G 5 HoN 18 A001pa ED037-P: Total Alkalinity as CaC03 EI 041G: Cutil Ne Qurbsdan eMszdal v CO4 92by i m G 5 HoN 18 A001pa ED041G: Sulfate as SO4 - Turbidimetric EII 044121-001 Anonymous ED041G: Sulfate as SO4 - Turbidimetric EM1104121-001 Anonymous ED041G: Sulfate as SO4 - Turbidimetric EM1104121-001 Anonymous ED041G: Sulfate as SO4 - Turbidimetric EM1104121-001 Anonymous ED045G: Chloride EM1104121-001 Anonymous ED045G: Chloride EM1104121-001 Anonymous ED045G: Chloride EM1104161-001 GW29 ED093F: Magnesium EM1104161-001 GW29 ED093F: Magnesium EG090h: i svvolbed MeN D by R PZMC Q 5 HoN 18 A94A1a ED093F: Asenic EM1104161-001 GW29 EG020A-F: Cadmium EM1104161-001 GW29 EG020A-F: Arsenic EG020A-F: Cabalitim EG020A-F: Cabalitim		ED03	37-P: Total Alkalinity as CaCO3	1	-	mg/L	1500	1450	3.4	0% - 20%
ED037-P: Carbonate Alkalinity as CaC03		ED03	37-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	-	mg/L	>	^	0.0	No Limit
E0037-P: Bicarbonate Alkalinity as CaCO3 E1 041G: Cutil Ne Qurbstsn eNscal v CO4 92by i m Q 5 HoN 18 A001pa ED041G: Sulfate as SO4 - Turbidimetric EM1104121-001 Anonymous ED041G: Sulfate as SO4 - Turbidimetric Ei 04pG: 5- Brsde i svcreNe 11 giver Q 5 HoN 18 A001aa ED041G: Sulfate as SO4 - Turbidimetric EM1104121-001 Anonymous ED045G: Chloride EM1104121-001 Anonymous ED045G: Chloride EM1104121-001 Anonymous ED093F: Calcium EM1104121-001 Anonymous ED093F: Calcium EM1104161-001 GW29 ED093F: Magnesium EG090h: i svootGed MeN D by th R P2MC Q 5 HoN 18 A94A1a ED093F: Potassium EG020h: i svootGed MeN D by th R P2MC Q 5 HoN 18 A94A1a EG020A-F: Cadmium EM1104161-001 GW29 EG020A-F: Cadmium EG020A-F: Cabaltim EG020A-F: Cabaltim		ED03	37-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	^	^	0.0	No Limit
E1041G: CuDil Ne Qurbsq1sn eNscal v CO4 92by i m Q5 HoN 18A001pa ED041G: Sulfate as CaCO3 EM1104121-001 Anonymous ED041G: Sulfate as SO4 - Turbidimetric EM1104121-009 Anonymous ED041G: Sulfate as SO4 - Turbidimetric EM1104121-009 Anonymous ED041G: Sulfate as SO4 - Turbidimetric EM1104121-001 Anonymous ED045G: Chloride EM1104121-001 Anonymous ED045G: Chloride EM1104121-001 Anonymous ED093F: Calcium EM1104161-001 GW29 ED093F: Dotassium EM1104161-001 GW29 ED093F: Magnesium EG090h: i svvolßed MeN lb by R P2MC Q 5 HoN 18A94A1a ED093F: Potassium EG020A-F: Cadmium EG020A-F: Cadmium EG020A-F: Cadmium EG020A-F: Cadmium		ED03	37-P: Bicarbonate Alkalinity as CaCO3	71-52-3	_	mg/L	449	452	0.7	0% - 20%
Ei 041G: Cutil Ne Qurbadsa eNscal v CO4 92by i m Q 5 HoN 18A001pa EM1104121-001 Anonymous ED041G: Sulfate as SO4 - Turbidimetric EM1104121-001 Anonymous ED041G: Sulfate as SO4 - Turbidimetric Ei 04pG: 5 - Derste i svcrew 1t I giver Q 5 HoN 18A0014a ED045G: Chloride EM1104121-001 Anonymous ED045G: Chloride EM1104121-001 Anonymous ED045G: Chloride EM1104121-001 Anonymous ED093F: Calcium EM1104121-001 Anonymous ED093F: Sodium EM1104161-001 GW29 ED093F: Sodium EM1104161-001 EM29 ED093F: Sodium EM1104161-001 GW29 ED093F: Sodium EM1104161-001 EM29 ED093F: Sodium EM1104161-001 GW29 EG020A-F: Cadmium EM1104161-001 GW29 EG020A-F: Cadmium EM1104161-001 GW29 EG020A-F: Cadmium EG090A-F: Cabait EG020A-F: Cabait		ED03	37-P: Total Alkalinity as CaCO3		1	mg/L	449	452	0.7	0% - 20%
EM1104121-001 Anonymous ED041G; Sulfate as SO4 - Turbidimetric EM1104121-009 Anonymous ED041G; Sulfate as SO4 - Turbidimetric Ei 04pG; 5 - Drsafe i svcrek It I giver Q 5 HoN 18 A0014a ED045G; Chloride EM1104121-001 Anonymous ED045G; Chloride Ei 0) 3h: i svolbed MI Ror 51 Nbt v Q 5 HoN 18 A0019a ED093F; Calcium EM1104121-001 Anonymous ED093F; Calcium EM1104161-001 GW29 ED093F; Potassium EM1104161-001 GW29 ED093F; Magnesium EG090h: i svolbed MeN Iv by R P 2MC Q 5 HoN 18 A94A1a EG020A-F; Cadmium EM1104161-001 GW29 EG020A-F; Cadmium EG020A-F; Cabanium EG020A-F; Cabanium	041G: Culil Ne Qurbsdsn eNscal v		HoN 18A001pa							
EM1104121-009 Anonymous ED041G; Sulfate as SO4 - Turbidimetric Ei 04pG: 5 - Drsde i sycrete I I I gver G 5 HoN 18A0014a ED045G; Chloride EM1104121-001 Anonymous ED045G; Chloride Ei 0) 3h: i syvolbed MI Ror 5 I Nbt v G 5 HoN 18A0019a ED093F; Calcium EM1104121-001 Anonymous ED093F; Calcium EM1104161-001 GW29 ED093F; Sodium EG090h: i syvolbed MeN Iv by R PZMC G 5 HoN 18A94A1a ED093F; Sodium EG020A-F; Cadmium EG020A-F; Cadmium EM1104161-001 GW29 EG020A-F; Cadmium EG020A-F; Cabait EG020A-F; Cabait		ED04	41G: Sulfate as SO4 - Turbidimetric	14808-79-8	-	mg/L	80	80	0.0	0% - 20%
Ei 04pG: 5 - Bristle i svcrete i t I giver Q 5 HoN 18A0014a ED045G: Chloride EM1104121-001 Anonymous ED045G: Chloride Ei 0) 3h: i svvolbed MI For 5 I Nbt v Q 5 HoN 18A0019a ED093F: Calcium EM1104121-001 Anonymous ED093F: Calcium EM1104161-001 GW29 ED093F: Potassium EM1104161-001 GW29 ED093F: Sodium EG090h: i svvolbed MeN lb by R P2MC Q 5 HoN 18A94A1a ED093F: Potassium EG020A-F: Cadmium EG020A-F: Cadmium EG020A-F: Cabalium EG020A-F: Cadmium EG020A-F: Cobalt EG020A-F: Cobalt		ED04	41G: Sulfate as SO4 - Turbidimetric	14808-79-8	-	mg/L	74	74	0.0	0% - 20%
EM1104121-001 Anonymous ED045G; Chloride Ei 0) 3h: i svolbed MI For 51 Not v q 5 HoN 18 A019a ED093E; Calcium EM1104121-001 Anonymous ED093F; Calcium EM1104161-001 GW29 ED093F; Potassium EM1104161-001 GW29 ED093F; Sodium EG090h; i svvolbed MeN lb by lb P2MC q 5 HoN 18 A94Ata EG020A-F; Cadmium EG020A-F; Cabmium EG020A-F; Cabmium EG020A-F; Cabmium EG020A-F; Cabmium			e e							
EM1104121-009 Anonymous ED045G; Chloride Ei 0) 3h: i svolbed MI Ror 51 Not 1 C 5 HoN 18 A013a EM1104121-001 Anonymous ED093F: Calcium EM1104161-001 GW29 ED093F: Potassium EM1104161-001 GW29 ED093F: Calcium EG090h: i svvolbed MeN lb by the P2MC Q 5 HoN 18 A94Ata ED093F: Potassium EG020A-F: Cadmium EG020A-F: Cadmium EG020A-F: Cabaltum EG020A-F: Cadmium EG020A-F: Cabaltum EG020A-F: Cabaltum		ED04.	45G: Chloride	16887-00-6	-	mg/L	1190	1200	0.4	0% - 20%
EM1104121-001 Anonymous ED093F: Calcium EM1104121-001 Anonymous ED093F: Magnesium EM093F: Magnesium ED093F: Potassium EM1104161-001 GW29 ED093F: Potassium EG090h: I svvolbed MeN ib by is P2MC Q 5 HoN 18 A94A1a EG020A-F: Cadmium EG020A-F: Cadmium EG020A-F: Cadmium EG020A-F: Cabalt EG020A-F: Cabalt		ED04.	45G: Chloride	16887-00-6	_	mg/L	1400	1200	15.7	0% - 20%
EM1104121-001 Anonymous ED093F: Calcium EM093F: Magnesium ED093F: Sodium EM1104161-001 GW29 ED093F: Potassium EM104161-001 ED093F: Calcium ED093F: Magnesium EM093F: Magnesium ED093F: Sodium ED093F: Sodium EM104161-001 GW29 ED093F: Sodium EM1104161-001 GW29 EG020A-F: Cadmium EG020A-F: Cadmium EG020A-F: Cadmium EG020A-F: Cobalt EG020A-F: Cobalt		Q 5 HoN 18A0019a								
EM1104161-001 GW29 ED093F: Sodium EM1104161-001 GW29 ED093F: Potassium ED093F: Calcium ED093F: Magnesium ED093F: Sodium ED093F: Sodium EC090h: i svvolbed MeN IP by R P2MC Q 5 HoN 18 A94A1a EG020A-F: Cadmium EM1104161-001 GW29 EG020A-F: Cadmium EG020A-F: Cabait EG020A-F: Cobait		ED09.	33F: Calcium	7440-70-2	1	mg/L	53	52	0.0	0% - 20%
ED093F: Sodium ED093F: Potassium ED093F: Potassium ED093F: Calcium ED093F: Magnesium ED093F: Magnesium ED093F: Magnesium ED093F: Sodium ED093F: Potassium ED093F: Potassium ED093F: Potassium ED093F: Potassium EM1104161-001 GW29 EG020A-F: Cadmium EG020A-F:		ED09.	33F: Magnesium	7439-95-4	_	mg/L	47	47	0.0	0% - 20%
ED093F: Potassium		ED09.	33F: Sodium	7440-23-5	-	mg/L	826	841	1.8	0% - 20%
EM1104161-001 GW29 ED093F: Calcium		ED09	93F: Potassium	7440-09-7	~	mg/L	31	32	3.4	0% - 20%
ED093F: Magnesium ED093F: Sodium ED093F: Sodium ED093F: Potassium ED093F: Potassium EM1104161-001 GW29 EG020A-F: Cadmium EG020A-F: Arsenic EG020A-F: Cobalt EG020A		ED09.	33F: Calcium	7440-70-2	-	mg/L	22	58	0.0	0% - 20%
EG090h: i svvolbed MeN lb by th P2MC Q 5 HoN 18 494A1 E0203F: Potassium EM1104161-001 GW29 EG020A-F: Cadmium EG020A-F: Arsenic EG020A-F: Cobalt		ED09.	33F: Magnesium	7439-95-4	-	mg/L	56	56	0.0	0% - 20%
EG090h: i svoßed MeN iv by iv P2MC Q 5 HoN 18A94A1a EG020A-F: Cadmium EM1104161-001 GW29 EG020A-F: Cadmium EG020A-F: Arsenic EG020A-F: Cobalt		ED09.	33F: Sodium	7440-23-5	-	mg/L	602	809	0.8	0% - 20%
EG090h: i svolbed MeN lb by R P2MC Q 5 HoN 18A94A1a EM1104161-001 GW29 EG020A-F: Cadmium EG020A-F: Arsenic EG020A-F: Cobalt		ED09	93F: Potassium	7440-09-7	7	mg/L	7	8	0.0	No Limit
GW29	090h: isvo Bed MeN By RSP 20	MC Q 5 HoN 18A94A	ria							
EG020A-F: Arsenic EG020A-F: Cobalt		EG02	20A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG020A-F: Cobalt		EG02	20A-F: Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG02	20A-F: Cobalt	7440-48-4	0.001	mg/L	0.005	0.005	0.0	No Limit
EG020A-F: Copper		EG02	20A-F: Copper	7440-50-8	0.001	mg/L	0.005	0.005	0.0	No Limit



ENVIRONMENTAL EARTH SCIENCES 210074 ALBERT PARK GASWORKS

EM1104161 Amendment 1

Work Order

Client Project

Recovery Limits (%) 0% - 50% No Limit 0% - 20% No Limit No Limit No Limit 3% - 20% 0% - 20% 0% - 20% 20% - 20% 0% - 20% No Limit **RPD** (%) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4. 7.7 0.0 0.0 0.0 0.0 Laboratory Duplicate (DUP) Repor Original Result Duplicate Result <0.004 <0.004 <0.0001 <0.004 <0.004 <0.004 <0.004 <0.004 <0.004 <0.05 0.008 0.013 <0.001 <0.0001 <0.0001 0.008 <0.01 0.004 0.030 0.130 0.396 0.020 <0.01 0.46 2.30 <0.01 <0.01 <0.01 <0.01 2.05 6.35 <0.004 <0.004 <0.004 <0.0001 <0.0001 <0.004 <0.004 <0.004 <0.0001 0.013 0.004 <0.001 <0.00> <0.004 0.403 0.008 <0.05 0.009 0.028 0.127 0.021 <0.01 <0.01 0.46 2.26 <0.01 <0.01 <0.01 6.97 mg/L Unit 0.005 0.0001 0.001 0.001 0.001 0.005 0.0001 0.0001 0.004 0.004 0.004 0.004 0.004 0.004 0.001 0.001 0.001 0.001 0.001 0.004 0.004 0.001 0.01 0.05 0.05 0.05 LOR 0.01 0.01 0.01 0.05 0.01 0.01 7439-97-6 7439-97-6 57-12-5 T 7440-43-9 7440-48-4 7440-50-8 7440-02-0 18540-29-9 57-12-5 7439-96-5 7440-02-0 7440-66-6 7429-90-5 7782-49-2 7440-42-8 7439-89-6 7440-38-2 7439-92-1 7439-96-5 7440-66-6 7429-90-5 7782-49-2 7440-42-8 7439-89-6 18540-29-9 7439-92-1 EK028G: Weak Acid Dissociable Cyanide EK09xG: Welk most is svood b Dos 5 y It ste By is verente mat I Dyver Q 5 HoN 18A44A9a EK09xG: Welk most is vood bios 5 ylt ste By is vore Nemt I giver Of 5 Hon 18A44A3a EG050F: Hexavalent Chromium EG050F: Hexavalent Chromium EG020A-F: Manganese EK026G: Total Cyanide EK026G: Total Cyanide EG020A-F: Manganese EK025G: Free Cyanide EK025G: Free Cyanide EG020A-F: Aluminium EG020A-F: Aluminium EG090h: is evo Boed MeN By By PAMC Of 5 HoN 18A94A1a 2cot Natued EG020A-F: Selenium EG020A-F: Cadmium EG020A-F: Selenium EG020A-F: Arsenic EG020A-F: Copper Method: Compound EG020A-F: Cobalt EG020A-F: Nickel EG020A-F: Nickel EG020A-F: Boron EG020A-F: Boron EG035F: Mercury EG035F: Mercury EK09AG: LoN D5 ylt sde By i sycreNe mt I Dyver Q75 HoN 18A3040a EG020A-F: Lead EG020A-F: Zinc EG020A-F: Zinc EG020A-F: Iron EG020A-F: Iron EK 09 p.G.: hree cyltscle by isvcreNemti Dyver OT5 Ho Ni18Ax 8 p8a EG0p0h: is svo Bed Seil 6 Bet N5 - ron an Q 5 HoN 18A01xAa EG03ph: i svvolbed Mercury by hRMC Q7 5 HoN 18A94A0a EK040P: hDiorsde by P5 LsNI Nor Q 5 HoN 18p) A01a Client sample ID Anonymous Anonymous Anonymous Anonymous Anonymous Anonymous Anonymous Anonymous GW38 **GW29 GW28** Laboratory sample ID Sub-Matrix: WmLET EM1104129-004 EM1104129-013 EM1104161-004 EM1104165-001 EM1104161-001 EM1104165-001 EM1104149-003 EM1104161-006 EM1104161-001 EM1104161-001 EM1104165-001 EM1104165-004 EM1104161-001 EM1104165-001



Page : 5 of 16

Work Order : EM1104161 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 210074 ALBERT PARK GASWORKS

Sub-Matrix: WmLET				•		Laboratory Du	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK040P: hDiorsde by	EK040P: hDuorsde by P5 LSMIN br Q75 HoN 18p) A01a 2 cot Natued	01a 2cot Nt ued							
EM1104137-008	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	3.5	3.5	0.0	0% - 20%
EM1104164-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	3.2	3.2	0.0	0% - 20%
EKOp8G: VSVSN I v V by i svcrene	mt i Byver	Q 5 HoN 18A0013a							
EM1104121-001	Anonymous	EK057G: Nitrite as N	-	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM1104161-001	GW29	EK057G: Nitrite as N	1	0.01	mg/L	60.0	<0.01	160	No Limit
EKOD) G: VSYSNE (DIV	v VsNrlNe Iv V OVO jaby isvo	EKOp) G: VSMSNe (Dav VSMINe Iv V OVO) a by is ycrene mt i Dyver OT 5 Hon 18AA134a							
EM1104121-001	Anonymous	EK059G: Nitrite + Nitrate as N	-	0.01	mg/L	1.75	1.70	3.2	0% - 20%
EM1104121-010	Anonymous	EK059G: Nitrite + Nitrate as N	-	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK081G: Tel cN6e P.	- ov(- oruv I v P by dsvcreNe	EK 081 G: TelcM6e P-ov (-oruv Iv Pby dsv creNe It IByver QT5 HoN 18 A001 Aa							
EM1104161-001	GW29	EK071G: Reactive Phosphorus as P	-	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM1104200-002	Anonymous	EK071G: Reactive Phosphorus as P		0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK0xpM: Culbsde Iv	ЕК0хрМ: CuDscde Iv C92 QT 5 HoN 18p)) 33a								
EM1104161-001	GW29	EK085: Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EM1104215-001	Anonymous	EK085: Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EP084m: Mot ocyclac	EP084m: Mot ocycle mron I Nc Sydrocl rbot v Q	5 HoN 18A44) 1a							
EM1104161-001	GW29	EP074: Styrene	100-42-5	2	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-85-8	2	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	2	hg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	2	hg/L	<5>	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	92-63-6	2	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	9-90-86	2	µg/L	<5	<5	0.0	No Limit
		EP074: p-IsopropyItoluene	9-87-6	2	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	2	µg/L	<5	<5	0.0	No Limit
EM1104165-001	Anonymous	EP074: Styrene	100-42-5	2	hg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-85-8	2	hg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	2	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	2	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	92-63-6	2	hg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	9-90-86	2	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	9-28-66	2	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	2	hg/L	<5	<5	0.0	No Limit
EP084B: Oj yget I Ne	EP084B: Ojyget INed 5 on (out dv Q7 5 HoN 18A44)1a	44) 1a							
EM1104161-001	GW29	EP074: Vinyl Acetate	108-05-4	20	hg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	20	hg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	20	hg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	20	hg/L	<50	<50	0.0	No Limit
EM1104165-001	Anonymons	EP074: Vinyl Acetate	108-05-4	20	hg/L	<50	<50	0.0	No Limit



: 6 of 16 : EM1104161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GASWORKS

Page Work Order Client Project

Sub-Matrix: WmLET						Laboratory L	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP084B: Oj yget I Ned	EP084B: Ojyget INed 5 on (out dv QT 5 HoN 18A44) 1a 2cot Natued	A44) 1a 2cot Nt ued							
EM1104165-001	Anonymous	EP074: 2-Butanone (MEK)	78-93-3	20	hg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	20	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	20	hg/L	<50	<50	0.0	No Limit
EP0845: Culbot I Ned	EP0845: Culbot I Ned 5 on (out dv Q 5 HoN 18A44) 1a	44) 1a							
EM1104161-001	GW29	EP074: Carbon disulfide	75-15-0	22	hg/L	<5	<5	0.0	No Limit
EM1104165-001	Anonymous	EP074: Carbon disulfide	75-15-0	2	hg/L	<5	<5	0.0	No Limit
EP084i : hun sglt N	Q 5 HoM 18A44) 1a								
EM1104161-001	GW29	EP074: 2.2-Dichloropropane	594-20-7	Ω.	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	Ω.	hg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	2	hg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	2	hg/L	<5	<5	0.0	No Limit
EM1104165-001	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	2	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	2	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	2	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	2	hg/L	<5	<5	0.0	No Limit
EP084E: SI Doget I No	EP084E: SIDoget INed mD(-INc: 5 on (out dv O(5 HoN 18A44)1a	[5 HoN 18A44) 1a							
EM1104161-001	GW29	EP074: 1.1-Dichloroethene	75-35-4	22	µg/L	<5	<5	0.0	No Limit
		EP074: lodomethane	74-88-4	2	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	2	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	2	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	2	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	2	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	22	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	2	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	22	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	2-00-62	2	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	2	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	2	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Tetrachloroethane	630-20-6	2	hg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	2	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	2	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	2	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	2	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	2	hg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	2	hg/L	<5	<5	0.0	No Limit



: 7 of 16 : EM1104161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES

Page Work Order Client Project

LBERT PARK GASWORKS	
210074 A	

	9		1000	000	11-11				
Laboratory sample ID	Criefit sample ID	Method: Compound	CAS Number	KO7) IIIO	Original Result	Duplicate Result	KPD (%)	Recovery LIMITS (%)
EP084E: SI Doget I N	ted mD(-INC 5 on (out dv	EP084E:SIDogetiNed mog(-INsc 5 on (out dv CT5 HoN 18A44) 1a 2 cotNatued							
EM1104161-001	GW29	EP074: Hexachlorobutadiene	87-68-3	2	µg/L	<5	~ 2	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	20	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	20	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	20	hg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	20	hg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	20	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	20	µg/L	<50	<50	0.0	No Limit
EM1104165-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	2	µg/L	^ 2	^ 2	0.0	No Limit
		EP074: lodomethane	74-88-4	2	µg/L	<5	^2	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	2	µg/L	<5	^2	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	2	hg/L	^ 2	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	2	µg/L	? 2	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	2	hg/L	< 2	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	2	µg/L	^ 2	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	2	hg/L	<2>	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	2	µg/L	^ 2	^ 2	0.0	No Limit
		EP074: Trichloroethene	79-01-6	2	hg/L	<5	^2	0.0	No Limit
		EP074: Dibromomethane	74-95-3	2	hg/L	<5	~ 2	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	2-00-62	2	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	2	hg/L	<5	~ 2	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	2	hg/L	<5	~ 2	0.0	No Limit
		EP074: 1.1.2-Tetrachloroethane	630-20-6	2	hg/L	<5	~ 2	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	2	hg/L	<5	~ 2	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	2	µg/L	<5	V	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	2	µg/L	<5	^2	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	2	hg/L	<5	~ 2	0.0	No Limit
		EP074: Pentachloroethane	7-10-97	2	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	2	µg/L	<5	^2	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	2	hg/L	<5	~ 2	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	20	hg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	20	hg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	20	hg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	20	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	20	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	20	µg/L	<50	<50	0.0	No Limit
EP084h: SI Doget I N	EP084h: SloogetiNed morn iNc. 5 on (out dv Qr.5 HoN 18A44) 1a	Q 5 HoN 18A44) 1a							
EM1104161-001	GW29	EP074: Chlorobenzene	108-90-7	2	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	2	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	2	µg/L	<5	~ 2	0.0	No Limit
_	_								



 Page
 : 8 of 16

 Work Order
 : EM1104161 Amendment 1

 Client
 : ENVIRONMENTAL EARTH SCIENCES

 Project
 : 210074 ALBERT PARK GASWORKS

Recovery Limits (%) No Limit RPD (%) 0.0 Laboratory Duplicate (DUP) Repor Original Result Duplicate Result <20 <20 20 62 5 5 \$ \$ 2 \$ \$ **%** 2 \$ \$ \$ ²2 လို လို 5 5 2 2 5 5 V 7 7 7 7 ²2 V <20 ^20 8 8 \$ ^5 2 5 5 \$ 5 ^5 \$ ^5 ^5 5 5 ^5 \$ 2 5 5 V ۲۷ ۲۷ \$ \$ 7 V hg/L Unit hg/L hg/L hg/L hg/L LOR 2 2 2 2 2 20 20 8 8 2 2 2 2 2 2 2 2 2 S 2 2 2 2 2 2 2 2 2 2 2 75-27-4 75-25-2 91-20-3 87-61-6 87-61-6 67-66-3 75-27-4 124-48-1 71-43-2 71-43-2 CAS Number 106-43-4 106-46-7 120-82-1 108-90-7 95-49-8 106-43-4 75-25-2 67-66-3 108-88-3 100-41-4 108-38-3 106-42-3 95-47-6 541-73-1 95-50-1 108-86-1 541-73-1 106-46-7 95-50-1 120-82-1 124-48-1 EP0x0/081: LoN DTeco6erl bB Sydrocl rbot v 2VEPM 9010 i rl fN Q 5 HoN 18A44) 9a EP074: 1.2.3-Trichlorobenzene EP074: Bromodichloromethane EP074: Dibromochloromethane EP074: Bromodichloromethane EP074: Dibromochloromethane EP074: 1.2.4-Trichlorobenzene EP074: 1.2.3-Trichlorobenzene EP074: 1.2.4-Trichlorobenzene EP084h: SI Doget INed maron INC 5 on (out dv QT 5 HoN 18A44) 1a 2 cot Natued EP074: 1.4-Dichlorobenzene EP074: 1.2-Dichlorobenzene EP074: 1.3-Dichlorobenzene EP074: 1.4-Dichlorobenzene EP074: 1.2-Dichlorobenzene EP080: meta- & para-Xylene EP074: 1.3-Dichlorobenzene EP080: C6 - C10 Fraction EP080: C6 - C10 Fraction EP080: C6 - C9 Fraction EP080: C6 - C9 Fraction EP074: 4-Chlorotoluene EP074: 4-Chlorotoluene EP074: Chlorobenzene EP074: Bromobenzene EP074: 2-Chlorotoluene EP080: Ethylbenzene EP080: Naphthalene EP080: ortho-Xylene EP074: Chloroform EP074: Bromoform EP074: Chloroform EP074: Bromoform Method: Compound EP080: Benzene EP080: Benzene EP080: Toluene EP0x0/081: LoN DPeNoloun Sydrocirbot v Q 5 HoN 18A44) 9a EP084G: Lrs I Done Nitev OT 5 Ho N 18A44) 1a Client sample ID EP0x0: BLEXV Q 5 HoN 18A44) 9a Anonymous Anonymous Anonymous Anonymous Anonymous **GW29 GW29** GW29 **GW29 GW29** Laboratory sample ID Sub-Matrix: WmLET EM1104161-001 EM1104165-001 EM1104165-001 EM1104161-001 EM1104165-001 EM1104165-001 EM1104161-001 EM1104165-001 EM1104161-001 EM1104161-001

ALS

: 9 of 16 : EM1104161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GASWORKS

Page Work Order Client Project

Sub-Matrix: WmLET						Laboratory D	Laboratory Duplicate (DUP) Report		
Laboratory sample ID Client sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Original Result Duplicate Result	RPD (%)	RPD (%) Recovery Limits (%)
EP0x0: BLEXV Q 5	EP0x0: BLEXV Q 5 HoN 18A44) 9a 2cot Nt ued								
EM1104165-001	Anonymous	EP080: Toluene	108-88-3	2	hg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	hg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	hg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	hg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	2	hg/L	<5	<5	0.0	No Limit



 Page
 : 10 of 16

 Work Order
 : EM1104161 Amendment 1

 Client
 : ENVIRONMENTAL EARTH SCIENCES

 Project
 : 210074 ALBERT PARK GASWORKS

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

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 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 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.

Method Blank (MB)

Laboratory Control Spike (LCS) Report

Sub-Matrix: WmLET

				Report	Sniko	Snike Peroveny (%)	Pacayany Limite (%)	limite (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	TCS	Low	High
Em01p: LoN Disvvo Bed Co Estv (7 5 HoN 18p))) 4a								
EA015H: Total Dissolved Solids @180°C	GIS-210-010	2	mg/L	<5	2000 mg/L	6.66	86	104
Ei 038P: mDkl Bt sky by P5 Lskil Nor C7 5 HoN 18p) A09a								
ED037-P: Total Alkalinity as CaCO3		1	mg/L		200 mg/L	88.0	77	127
Ei 041G: Cubil Ne Qurbadsn e Nacal v CO4 92 by i m Q 5 HoN 18A001 pa	4 18A001pa							
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	->	12.5 mg/L	100	81	125
Ei 04pG: 5-Dorscle i svcreNe It IDyver O7 5 HoN 18A0 014a								
ED045G: Chloride	16887-00-6	1	mg/L	-	1000 mg/L	98.8	88	117
Ei 0) 3h: isvo Bed MIFor 51 Notv Of 5 HoN 18A0 019a								
ED093F: Calcium	7440-70-2	_	mg/L	>	5 mg/L	102	81	129
ED093F: Magnesium	7439-95-4	_	mg/L	7	5 mg/L	101	80	120
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	96.1	78	124
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	92.2	79	121
EG090h: is svolbed MeN by by RS PAMC Q 5 HoN 18A94A1a								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	105	80	120
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	107	87	109
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	102	88	110
EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	107	87	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	106	98	108
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	106	06	110
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	0.66	87	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	104	98	112
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	98.2	83	111
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.9	98	120
EG020A-F: Boron	7440-42-8	0.05	mg/L	<0.05	0.1 mg/L	0.66	61	133
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	103	62	119
EG03ph: i svvo Bed Mercury by hRMC Q75 HoN 18A94A0a								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	102	7.1	125
EG0p0h:isvvo Boed Sejl 6IBet N5-ron sun O75 HoN 18A01xAa	хАа							
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	94.0	80	120
EK 09 p.G.: hree cyltsde by i svcreNemtl Dyver Of 5 Ho N 18Ax 8 p 8a	к8р8а							
EK025G: Free Cyanide	!	0.004	mg/L	<0.004	0.5 mg/L	86.0	73	17
EK 09AG: Lo ND5 yitsde ByisvcreNemtißyver Of 5 Ho N 18A 3040 a								
EK026G: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	109	82	125



Page : 11 of 16

Work Order : EM1104161 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 210074 ALBERT PARK GASWORKS

Sub-Matriv: Wm ET			Method Blank (MB)		Laboratory Control Spike (LCS) Report	CS) Report	
			Report	Spike	Spike Recovery (%)	Recovery Limits (%)	imits (%)
Method: Compound CAS Number	er LOR	Unit	Result	Concentration	SO7	Low	High
EK 19xG: Welk most is avocslb De 5 yltsde By is orceNemt i Dyver Of 5 HoN 18AA4 A9a	N 18A44A9a						
EK028G: Weak Acid Dissociable Cyanide	- 0.004	mg/L	<0.004	0.5 mg/L	9'29	64	104
EK 09x G: Welk mcsdisvocslb Be 5 yltsde By isvcreNemtl Dyver 07 5 Ho	Q 5 HoN 18A44A3a						
EK028G: Weak Acid Dissociable Cyanide	- 0.004	mg/L	<0.004	0.5 mg/L	9.92	64	104
EK040P: hDuorsde by P5 LsNI Nor C75 HoN 18p) A01a							
EK040P: Fluoride 16984-48-8	8 0.1	mg/L	<0.1	10 mg/L	102	78	120
EKOp8G: VsNsNelvVbyisvcreNemtlDyver CT5 HoN 18A0013a							
EK057G: Nitrite as N	- 0.01	mg/L	<0.01	0.5 mg/L	91.0	84	112
EKOD) G: VSASAL (Dav VSAN NE IV V OVO ja by isvcreNe mitigyver OT 5 HoN 18AA 134a	418AA134a						
EK059G: Nitrite + Nitrate as N	- 0.01	mg/L	<0.01	0.5 mg/L	84.7	73	127
EK081G: TelcNe6e P-ov (-oruv Iv P by ds/creNe It Ingver Of 5 HoN 18A001Aa	001Aa						
EK071G: Reactive Phosphorus as P	- 0.01	mg/L	<0.01	0.5 mg/L	94.3	84	108
EK0xpM: Culbate I v C92 Q 5 HoN 18p) 33a							
EK085: Sulfide as S2- 18496-25-8	0.10	mg/L	<0.1	0.5 mg/L	0.06	82	116
EP084m: Mot ocyclac mron I Nc Sydroci rbot v Q 5 HoN 18A44) 1a							
EP074: Styrene 100-42-5	5	hg/L	<5	20 µg/L	119	74	122
EP074: Isopropylbenzene 98-82-8	5	hg/L	<5	20 µg/L	116	80	120
EP074: n-Propylbenzene 103-65-1	5	hg/L	<5	20 µg/L	# 120	70	120
EP074: 1.3.5-Trimethylbenzene	8	hg/L	<5	20 µg/L	# 119	71	119
EP074: sec-Butylbenzene 135-98-8	8	hg/L	<5	20 µg/L	118	72	120
EP074: 1.2.4-Trimethylbenzene	9	hg/L	<5	20 µg/L	102	73	119
EP074: tert-Butylbenzene 98-06-6		hg/L	<5	20 µg/L	118	73	119
EP074: p-lsopropyltoluene	6 5	hg/L	<5	20 µg/L	119	71	121
EP074: n-Butylbenzene	5	hg/L	<5	20 µg/L	120	65	121
EP084B: Oj yget I Ned 5 on (out dv							
EP074: Vinyl Acetate 108-05-4	4 50	hg/L	<50	200 µg/L	81.2	57	131
EP074: 2-Butanone (MEK) 78-93-3		hg/L	<50	200 µg/L	117	69	135
EP074: 4-Methyl-2-pentanone (MIBK)		hg/L	<50	200 µg/L	112	89	136
EP074: 2-Hexanone (MBK) 591-78-6	9	hg/L	<50	200 µg/L	116	89	138
EP0845: Culbot I Ned 5 on (out dv Q 5 HoN 18A44) 1a							
EP074: Carbon disulfide 75-15-0	0 5	hg/L	<5	20 µg/L	117	29	127
EP084i: hun sgl t N							
EP074: 2.2-Dichloropropane 594-20-7	7 5	hg/L	<5	20 µg/L	109	59	128
EP074: 1.2-Dichloropropane 78-87-5	5	µg/L	<5	20 µg/L	116	77	121
EP074: cis-1.3-Dichloropropylene	5 5	hg/L	<5	20 µg/L	114	70	118
EP074: trans-1.3-Dichloropropylene	9	hg/L	<5	20 µg/L	112	99	120
EP074: 1.2-Dibromoethane (EDB)	5	hg/L	<5	20 µg/L	116	78	124
EP084E: SIDogetiNed mD(-INc: 5 on (out dv C(5 HoN 18A44)1a							



Sub-Matrix: WmLET				Method Blank (MB)		Laboratory Control Spike (LCS) Report	S) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	Low	High
EP084E: Slooget INed mood - INc. 5 on (out dv	Q 5 HoN 18A44) 1a 2cot Nt ued							
EP074: Dichlorodifluoromethane	75-71-8	20	hg/L	<50	200 µg/L	118	58	148
EP074: Chloromethane	74-87-3	20	hg/L	<50	200 µg/L	136	62	142
EP074: Vinyl chloride	75-01-4	20	hg/L	<50	200 µg/L	124	61	141
EP074: Bromomethane	74-83-9	20	hg/L	<50	200 µg/L	122	57	131
EP074: Chloroethane	75-00-3	20	hg/L	<50	200 µg/L	129	64	138
EP074: Trichlorofluoromethane	75-69-4	20	hg/L	<50	200 µg/L	119	29	131
EP074: 1.1-Dichloroethene	75-35-4	2	hg/L	<5	20 µg/L	113	7.1	125
EP074: Iodomethane	74-88-4	2	hg/L	~ 2	20 µg/L	115	61	135
EP074: trans-1.2-Dichloroethene	156-60-5	2	hg/L	<5 <5	20 µg/L	116	75	121
EP074: 1.1-Dichloroethane	75-34-3	2	hg/L	~ 2	20 µg/L	114	77	121
EP074: cis-1.2-Dichloroethene	156-59-2	2	hg/L	~ 2	20 µg/L	114	78	122
EP074: 1.1.1-Trichloroethane	71-55-6	2	hg/L	~ 2	20 µg/L	107	70	120
EP074: 1.1-Dichloropropylene	563-58-6	2	hg/L	<5	20 µg/L	114	74	122
EP074: Carbon Tetrachloride	56-23-5	2	hg/L	\ \ \ \	20 µg/L	94.9	57	123
EP074: 1.2-Dichloroethane	107-06-2	2	hg/L	<5	20 µg/L	117	75	125
EP074: Trichloroethene	79-01-6	5	hg/L	<5	20 µg/L	114	77	121
EP074: Dibromomethane	74-95-3	2	hg/L	<5	20 µg/L	113	92	122
EP074: 1.1.2-Trichloroethane	79-00-5	2	hg/L	<5	20 µg/L	119	78	126
EP074: 1.3-Dichloropropane	142-28-9	2	hg/L	<5	20 µg/L	115	79	125
EP074: Tetrachloroethene	127-18-4	2	hg/L	<5>	20 µg/L	119	92	122
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	2	hg/L	<5	20 µg/L	102	65	119
EP074: trans-1.4-Dichloro-2-butene	110-57-6	2	hg/L	<5	20 µg/L	0.96	46	126
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	2	hg/L	<5	20 µg/L	108	54	132
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	2	hg/L	<5	20 µg/L	115	75	131
EP074: 1.2.3-Trichloropropane	96-18-4	2	hg/L	<5	20 µg/L	115	75	133
EP074: Pentachloroethane	76-01-7	2	hg/L	<5	20 µg/L	91.9	46	118
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	2	hg/L	<5	20 µg/L	91.4	54	124
EP074: Hexachlorobutadiene	87-68-3	5	hg/L	<5	20 µg/L	123	50	134
EP084h: SloogetiNed maron iNc. 5 on (out dv. 07 5 HoN 18A44)1	Q 5 HoN 18A44) 1a							
EP074: Chlorobenzene	108-90-7	2	hg/L	<5	20 µg/L	120	81	121
EP074: Bromobenzene	108-86-1	2	hg/L	<5	20 µg/L	109	75	119
EP074: 2-Chlorotoluene	95-49-8	2	hg/L	<5	20 µg/L	103	73	121
EP074: 4-Chlorotoluene	106-43-4	2	hg/L	<5	20 µg/L	106	72	120
EP074: 1.3-Dichlorobenzene	541-73-1	2	hg/L	<5	20 µg/L	106	73	119
EP074: 1.4-Dichlorobenzene	106-46-7	2	hg/L	<5	20 µg/L	110	74	120
EP074: 1.2-Dichlorobenzene	95-50-1	2	hg/L	<5	20 µg/L	105	78	118
EP074: 1.2.4-Trichlorobenzene	120-82-1	15	ng/L	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	20 ug/L	1 80	76	128
))		20 Pg/L	00	2	1



: 13 of 16 : EM1104161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GASWORKS

Page Work Order Client Project

Sub-Matrix: WnLET				Method Blank (MB)		Laboratory Control Spike (LCS) Report	S) Report	
	-			Report	Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	Low	High
EP084G: Lrs IDon eN It ev (75 HoN 18A44) 1a 2 cot Natued								
EP074: Chloroform	67-66-3	5	hg/L	<5	20 µg/L	116	77	121
EP074: Bromodichloromethane	75-27-4	5	hg/L	<5	20 µg/L	102	69	117
EP074: Dibromochloromethane	124-48-1	5	hg/L	<5	20 µg/L	87.8	59	119
EP074: Bromoform	75-25-2	5	hg/L	<5	20 µg/L	80.2	49	121
EP08p@CRMaB:PoDytucDelrmronINcSydrocIrbotv Of5HoN 18p)px)a	oN 18p) px) a							
EP075(SIM): Naphthalene	91-20-3	_	hg/L	<1.0	5 µg/L	55.4	27.5	124
EP075(SIM): Acenaphthylene	208-96-8	_	hg/L	<1.0	5 µg/L	58.9	35	129
EP075(SIM): Acenaphthene	83-32-9	-	hg/L	<1.0	5 µg/L	56.4	35	127
EP075(SIM): Fluorene	86-73-7	_	hg/L	<1.0	5 µg/L	60.2	36	130
EP075(SIM): Phenanthrene	85-01-8	_	hg/L	<1.0	5 µg/L	64.5	42	132
EP075(SIM): Anthracene	120-12-7	_	hg/L	<1.0	5 µg/L	63.0	42	132
EP075(SIM): Fluoranthene	206-44-0	_	hg/L	<1.0	5 µg/L	65.2	41	141
EP075(SIM): Pyrene	129-00-0	_	hg/L	<1.0	5 µg/L	66.5	40	142
EP075(SIM): Benz(a)anthracene	56-55-3	_	hg/L	<1.0	5 µg/L	9.69	33	153
EP075(SIM): Chrysene	218-01-9	_	hg/L	<1.0	5 µg/L	61.9	37	145
EP075(SIM): Benzo(b)fluoranthene	202-99-2	_	hg/L	<1.0	5 µg/L	60.2	35	151
EP075(SIM): Benzo(k)fluoranthene	207-08-9	_	hg/L	<1.0	5 µg/L	59.9	39	141
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	hg/L	<0.5	5 µg/L	62.9	41	139
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	hg/L	<1.0	5 µg/L	71.0	35	141
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	_	hg/L	<1.0	5 µg/L	72.6	36	142
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	-	µg/L	<1.0	5 µg/L	72.0	10	142
EP0x0/081: LoN DPeNote un Sydroci rbot v Q 5 HoN 18p) pxxa	хха							
EP071: C10 - C14 Fraction	-	50	hg/L	<50	2720 µg/L	123	64	124
EP071: C15 - C28 Fraction	1	100	hg/L	<100	8912 µg/L	115	70	130
EP071: C29 - C36 Fraction	-	50	hg/L	<50	1847 µg/L	118	68	128
EP0x0/081: LoN DPeNoloun Sydroci rbot v Q 5 HoN 1844) 9a	.) 9a							
EP080: C6 - C9 Fraction		20	hg/L	<20	320 µg/L	104	72	136
EP0x0/081: LoN DTeco6erl ble Sydrocl rbot v 2VEPM 9010 i rl fN	i ri fN Q 5 HoN 18p)	I8p) pxxa						
EP071: >C10 - C16 Fraction	1	100	hg/L	<100	5160 µg/L	100	70	130
EP071: >C16 - C34 Fraction	-	100	hg/L	<100	8320 µg/L	117	70	130
EP071: >C34 - C40 Fraction		100	hg/L	<100	540 µg/L	122	70	130
EP0x0/081: LoN DT eco6erl b Sydrocl rbot v 2VEPM 9010 i rl fN Q 5 HoN 18A44) 9a	i rifN Q 5 HoN	18A44) 9a						
EP080: C6 - C10 Fraction	-	20	hg/L	<20	370 µg/L	102	70	130
EP0x0: BLEXV Q 5 HoN 18A44) 9a								
EP080: Benzene	71-43-2	7	hg/L	1>	20 µg/L	107	73	127
EP080: Toluene	108-88-3	2	hg/L	<2	20 µg/L	107	74	128
EP080: Ethylbenzene	100-41-4	2	hg/L	<2	20 µg/L	108	72	126



: 14 of 16 : EM1104161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GASWORKS

Page Work Order Client Project

Sub-Matrix: WmLET				Method Blank (MB)		Laboratory Control Spike (LCS) Report	3) Report	
				Report	Spike	Spike Recovery (%)	Recovery Limits (%)	imits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	Low	High
EP0x0: BLEXV Q 5 HoN 18A44) 9a 2cot № ued								
EP080: meta- & para-Xylene	108-38-3	2	hg/L	<2	40 µg/L	108	69	133
	106-42-3							
EP080: ortho-Xylene	92-47-6	2	hg/L	<2	20 µg/L	109	74	128
EP080: Naphthalene	91-20-3	2	hg/L	<5	5 µg/L	107	70	130



: EM1104161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GASWORKS : 15 of 16 Work Order Project Client

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory spilit 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: WmLET				Matrix Spike (MS) Report	ort	
			Spike	Spike Recovery (%)	Recovery Limits (%)	Limits (%)
Laboratory sample ID Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
Ei 041G: Cubil Ne Qurbsden eNscal v CO4 92 by im Q75 HoN 18A001 pa	18A001pa					
EM1104121-002 Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130
Ei 04pG: 5- Dorsde i svcreNe Itl Dyver Q 5 HoN 18A0014a						
EM1104121-002 Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	124	70	130
EG090h: i svo Bed MeN Br by R5 P2MC Q7 5 HoN 18A94A1a						
EM1104161-001 GW29	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	102	89	139
	EG020A-F: Cadmium	7440-43-9	0.05 mg/L	104	75	131
	EG020A-F: Cobalt	7440-48-4	0.2 mg/L	6.66	77	129
	EG020A-F: Copper	7440-50-8	0.2 mg/L	101	71	127
	EG020A-F: Lead	7439-92-1	0.2 mg/L	96.3	71	123
	EG020A-F: Manganese	7439-96-5	0.2 mg/L	90.0	99	132
	EG020A-F: Nickel	7440-02-0	0.2 mg/L	98.8	73	129
	EG020A-F: Zinc	7440-66-6	0.2 mg/L	94.7	68	136
EG03ph: i svoßed Mercury by hRMC Q75 HoN 18A94A0a						
EM1104161-002 GW30	EG035F: Mercury	7439-97-6	0.0100 mg/L	97.7	70	130
EG0p0h: i svvo Bed Sej I 6I Det N5 - ron sun QT 5 HoN 18A01xAa	Aa					
EM1104149-004 Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	114	70	130
EK 09pG: hree cyltsde by isvcreNe mtl Dyver Of 5 HoN 18Ax 8p8a	8p8a					
EM1104161-002 GW30	EK025G: Free Cyanide		0.5 mg/L	93.7	20	130
EK 09AG: LoND5 yltsde By isvcreNemtl Dyver Of 5 HoN 18A3040a	3040a					
EM1104161-002 GW30	EK026G: Total Cyanide	57-12-5	0.2 mg/L	108	70	130
mosd i s	gver Q 5 HoN 18A44A9a					
EM1104129-005 Anonymous	EK028G: Weak Acid Dissociable Cyanide		0.5 mg/L	80.6	70	130
mosd i	gver Q 5 HoN 18A44A3a					
EM1104161-005 GW32	EK028G: Weak Acid Dissociable Cyanide		0.5 mg/L	97.4	20	130
EK040P: hDaorsde by P5 LsNINbr C75 HoN 18p) A01a						
EM1104161-001 GW29	EK040P: Fluoride	16984-48-8	5.0 mg/L	101	20	130
EK0p8G: Vs/stelv V by isvcreNentilyver CT5HoN 18A0013a	13a					
EM1104121-002 Anonymous	EK057G: Nitrite as N		0.5 mg/L	113	70	130
EKOp) G: Volvole (Div Volville Iv V OVO ja by i svcrelle mati Dyver OT 5 HoN 18AA134a	ver Q 5 HoN 18AA134a					
EM1104121-002 Anonymous	EK059G: Nitrite + Nitrate as N		0.5 mg/L	# Not Determined	20	130
ee P- o	Q 5 HoN 18 A001 Aa					
EM1104161-002 GW30	EK071G: Reactive Phosphorus as P		0.5 mg/L	100	20	130



Matrix Spike (MS) Report

: 16 of 16 : EM1104161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GASWORKS

Page Work Order Client Project

Sub-Matrix: WmLET

				Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP084E: SI Doget I N	EP084E:SIBogetINedmol(-INc5 on (out dv 075 HoN 18A44)1a						
EM1104161-002	GW30	EP074: 1.1-Dichloroethene	75-35-4	20 µg/L	97.4	54	104
		EP074: Trichloroethene	79-01-6	20 µg/L	98.0	62	120
EP084h: SI Doget I N	EP084h: SI Deget INed mron INC 5 on (out dv Q 5 HoN 18A44) 1a						
EM1104161-002	GW30	EP074: Chlorobenzene	108-90-7	20 µg/L	112	89	132
EP0x0/081: LoN DPe	EP0x0/081: LoN DPeNoleun Sydrocl rbot v Q 5 HoN 18A44) 9a						
EM1104161-002	GW30	EP080: C6 - C9 Fraction	-	280 µg/L	103	51	125
EP0x0/081: LoN DT e	EP0x0/081: LoN DTeco6erl ble Sydrocl rbot v 2VEPM 9010 i rl fN Q 5 HoN 18A44) 9a	Q 5 HoN 18A44) 9a					
EM1104161-002	GW30	EP080: C6 - C10 Fraction	-	330 µg/L	103	70	130
EP0x0: BLEXV Q 5 HoN 18A44) 9a	HoN 18A44) 9a						
EM1104161-002	GW30	EP080: Benzene	71-43-2	20 µg/L	98.1	63	131
		EP080: Toluene	108-88-3	20 µg/L	101	65	133



ANALYTICAL CHEMISTRY & TESTING SERVICES



Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Page : 1 of 13		Laboratory : Environmental Division Melbourne Contact : Carol Walsh Address : 3 Westall Rd Springvale VIC Australia F171	E-mail : carol.walsh@alsenviro.com Telephone : +61-F-8539 9641 Yacsimile : +61-F-8539 9641	QC Level : NEPM 1999 Schedule B(F) and ALS QCSF requirement	les Received	Issue Date : F4-MA, -2411	No. of samples received : 14 No. of samples analysed : 14
: EM1104161	<u></u>	: ENVIRONMENTAL EARTH SCIENCES : MR DAVID JAMES : P.O.BOX 225F YOOTSCRA, VICUA0STRALIA F411	: djames@eesi.biz : +61 96871666 : +61 4F 96871833	: 214473 ALBERT PARK GASWORKS :		. DJ	: ME/415/11 VE
Work Order	Amendment	Client Contact Address	E-mail Telephone Yacsimile	Project Site	C-O-C number	Sampler Order number	Quote number

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 Yrequency Compliance
- Brief Method Summaries
- Summary of Outliers

Environmental Division Melbourne Part of the ALS Laboratory Group

3 Westall Rd Springvale VIC Australia F171 Tel. +61-3-8649 9600 Yax. +61-F-8539 9641 www.alsglobal.com

A Campbell Brothers Limited Company



Page : 2 of 13

Work Order : EM1143161 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Project : 214473 ALBERT PARK GASWORKS

Analysis Holding Time Compliance

extraction / digestion is involved or period from extraction / digestion where this is present. Yor composite samplesUsampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on 0SEPA SW 836UAPHAUAS and NEPM (1999). A listing of breaches is provided in the 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 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 Summary of Outliers. Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. Yor non-volatile analytesU 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 (13 days); Mercury (28 days) & other metals (184 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters. Evaluation: \times = Holding time breach; \checkmark = Within holding time.

Matrix: WATER

Method		Sample Date	Ex	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005: pH								
Clear Plastic Bottle - Natural GW29		18-APR-2011	!	-	l	21-APR-2011	18-APR-2411	×
Clear Plastic Bottle - Natural GWF4U GW28U GWF8U GWF7	GW8U GWF2U D0P2U	19-APR-2011	I	I		21-APR-2011	19-APR-2411	×
EA015: Total Dissolved Solids								
Clear Plastic Bottle - Natural GW29		18-APR-2011	!	-		21-APR-2011	25-APR-2411	>
Clear Plastic Bottle - Natural GWF4U GW28U GWF8U GWF7	GW8U GWF2U D0P2U	19-APR-2011	I	I		21-APR-2011	26-APR-2411	>
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural GW29		18-APR-2011	I	42-MA, -2411	1	21-APR-2011	42-MA, -2411	>
Clear Plastic Bottle - Natural GWF4U GW28U GWF8U GWF7	GW8U GWF2U D0P2U	19-APR-2011	I	4F-MA, -2411		21-APR-2011	4F-MA, -2411	>
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural GW29		18-APR-2011	I	16-MA, -2411		28-APR-2011	16-MA, -2411	>
Clear Plastic Bottle - Natural GWF4U GW28U GWF8U GWF7	GW8U GWF2U D0P2U	19-APR-2011	i	17-MA, -2411		28-APR-2011	17-MA, -2411	>



Page Work Order Client

: F of 13 : EM1143161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 214473 ALBERT PARK GASWORKS

Project	: ENVIRONMENTAL EARTH SCIENCES : 214473 ALBERT PARK GASWORKS						<u> </u>	ALS)
Matrix: WATER					Evaluation:	× = Holding time	Evaluation: $\mathbf{x} = Holding$ time breach ; $\checkmark = Within$ holding time.	holding time.
Method		Sample Date	EX	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)	ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED045G: Chloride Discrete analyser	rete analyser							
Clear Plastic Bottle - Natural GW29	latural	18-APR-2011	I	16-MA, -2411	-	28-APR-2011	16-MA, -2411	>
Clear Plastic Bottle - Natural GWF4U GW28U GWF8U GWF7	latural GW8U GWF2U D0P2U	19-APR-2011	I	17-MA, -2411		28-APR-2011	17-MA, -2411	. >
ED093F: Dissolved Major Cations	or Cations							
Clear Plastic Bottle - Filtered; Lab-acidified GW29	iltered; Lab-acidified	18-APR-2011	I	16-MA, -2411	1	28-APR-2011	16-MA, -2411	>
Clear Plastic Bottle - Filtered; Lab-acidified GWF4U GW28U GWF8U GWF7	iltered; Lab-acidified GW8U GWF2U D0P2U	19-APR-2011	I	17-MA, -2411		28-APR-2011	17-MA, -2411	>
EG020F: Dissolved Metals by ICP-MS	als by ICP-MS							
Clear Plastic Bottle - Filtered; Lab-acidified GW29	iltered; Lab-acidified	18-APR-2011	ŀ	15-OCT-2411		28-APR-2011	15-OCT-2411	>
Clear Plastic Bottle - Filtered; Lab-acidified GWF4U GW28U GWF8U GWF7	iltered; Lab-acidified GW8U GWF2U D0P2U	19-APR-2011	I	16-OCT-2411	1	28-APR-2011	16-OCT-2411	>
Clear Plastic Bottle - U	Clear Plastic Bottle - Unfiltered; Lab-acidified RINSATE 1	18-APR-2011	i	15-OCT-2411	-	28-APR-2011	15-OCT-2411	>
EG035F: Dissolved Mercury by FIMS Clear Plastic Bottle - Filtered: Lab-acidified	cury by FIMS iltered: Lab-acidified							
GW29		18-APR-2011	I	16-MA, -2411	-	02-MAY-2011	16-MA, -2411	>
Clear Plastic Bottle - Filtered; Lab-acidified GWF4U GW28U GWF8U GWF7	iltered; Lab-acidified GW8U GWF2U D0P2U	19-APR-2011	I	17-MA, -2411	-	02-MAY-2011	17-MA, -2411	>
Clear Plastic Bottle - U	Clear Plastic Bottle - Unfiltered; Lab-acidified RINSATE 1	18-APR-2011	I	42-MA, -2411	1	02-MAY-2011	42-MA, -2411	>
EG050F: Dissolved Hexavalent Chromium	avalent Chromium							
Clear Plastic Bottle - NaOH	IaOH RINSATE 1	18-APR-2011	!	-	!	21-APR-2011	16-MA, -2411	>
Clear Plastic Bottle - NaOH GWF4U GW28U GWF8U GWF7	вон GW8U GWF2U D0 P2U	19-APR-2011	I			21-APR-2011	17-MA, -2411	>



: 3 of 13 : EM1143161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 214473 ALBERT PARK GASWORKS Page Work Order Client Project

Matrix: WATER					Evaluation:	= Holding time	Evaluation: $\mathbf{x}=Holding$ time breach ; $\checkmark=Within$ holding time.	holding time.
Method		Sample Date	Exi	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK025G: Free cyanide by Discrete Analyser								
White Plastic Bottle-NaOH GW29U	RINSATE 1	18-APR-2011	02-MAY-2011	42-MA, -2411	>	02-MAY-2011	42-MA, -2411	>
White Plastic Bottle-NaOH GWF4U GW28U GWF8U GWF7	GW8U GWF2U D0P2U	19-APR-2011	02-MAY-2011	4F-MA, -2411	>	02-MAY-2011	4F-MA, -2411	>
EK026G: Total Cyanide By Discrete Analyser								
White Plastic Bottle-NaOH GW29U	RINSATE 1	18-APR-2011	27-APR-2011	42-MA, -2411	>	27-APR-2011	42-MA, -2411	>
White Plastic Bottle-NaOH								
GWF4U	GW8U	19-APR-2011	27-APR-2011	4F-MA, -2411	>	27-APR-2011	4F-MA, -2411	>
GWZ8U GWZ8U GWZ8U	GWFZU D0P2U							
GWF7								
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser	nalyser							
White Plastic Bottle-NaOH GW29U	RINSATE 1	18-APR-2011	28-APR-2011	42-MA2411	>	28-APR-2011	42-MA, -2411	`
White Plastic Bottle-NaOH								
GWF4U GW28II	GW8U GWE2H	19-APR-2011	28-APR-2011	4F-MA, -2411	>	28-APR-2011	4F-MA, -2411	>
GWF8U GWF7	D0P2U							
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural GW29		18-APR-2011	1	16-MA, -2411	!	21-APR-2011	16-MA, -2411	>
Clear Plastic Bottle - Natural								
GWF4U GW2811	GW8U	19-APR-2011	I	17-MA, -2411		21-APR-2011	17-MA, -2411	>
GWEZ	DOP2U							
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid		18-APR-2011	ŀ	16-MA, -2411		03-MAY-2011	16-MA, -2411	>
Clear Plastic Bottle - Sulfuric Acid								
GWF4U	GW8U	19-APR-2011	1	17-MA, -2411		03-MAY-2011	17-MA, -2411	>
GW28U GWF8U	GWF2U D0P2U							
GWF7								



: 5 of 13 : EM1143161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 214473 ALBERT PARK GASWORKS Page Work Order Project Client

Evaluation: \mathbf{x} = Holding time breach; \checkmark = Within holding time. Matrix: WATER

Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural GW29		18-APR-2011	1	24-APR-2411	-	20-APR-2011	24-APR-2411	>
Clear Plastic Bottle - Natural								
GWF4U	GW8U	19-APR-2011	1	21-APR-2411		20-APR-2011	21-APR-2411	>
GW28U GWE811	GWF2U							
GWF7								
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser	nalyser							
Clear Plastic Bottle - Sulfuric Acid								
GW29		18-APR-2011	1	16-MA, -2411		28-APR-2011	16-MA, -2411	>
Clear Plastic Bottle - Sulfuric Acid								
GWF4U	GW8U	19-APR-2011	ı	17-MA, -2411	1	28-APR-2011	17-MA, -2411	>
GW28U	GWF2U							
GWF8U	DOP2U							
GWP/								
EK071G: Reactive Phosphorus as P by discrete analyser	ser							
Clear Plastic Bottle - Natural								
GW29		18-APR-2011	ŀ	24-APR-2411	-	20-APR-2011	24-APR-2411	>
Clear Plastic Bottle - Natural								
GWF4U	GW8U	19-APR-2011	1	21-APR-2411	1	20-APR-2011	21-APR-2411	>
GW28U	GWF2U							
GWF8U	D0P2U							
GWF7								
EK085M: Sulfide as S2-								
Clear Plastic Bottle - Zinc Acetate/NaOH								
GW29U	RINSATE 1	18-APR-2011	I	1		21-APR-2011	25-APR-2411	>
Clear Plastic Bottle - Zinc Acetate/NaOH								
GWF4U	GW8U	19-APR-2011	1	-	1	21-APR-2011	26-APR-2411	>
GW28U	GWF2U							
GWF8U	D0P2U							
GWF7								
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial- NaHSO4 or H2SO4								
GW29U	RINSATE 1	18-APR-2011	29-APR-2011	42-MA, -2411	>	30-APR-2011	42-MA, -2411	>
Amber VOC Vial- NaHSO4 or H2SO4								
GWF4U	GW8U	19-APR-2011	29-APR-2011	4F-MA, -2411	>	30-APR-2011	4F-MA, -2411	>
GW28U	GWF2U							
GWF8U	D0P2U							
TRIP 2U	GWF7							



: 6 of 13 : EM1143161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 214473 ALBERT PARK GASWORKS Page Work Order Client Project

Matrix: WATER					Evaluation:	x = Holding time	Evaluation: x = Holding time breach; v = Within holding time.	holding time.
Method		Sample Date	Ex	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074B: Oxygenated Compounds								
Amber VOC Vial- NaHSO4 or H2SO4	RINSATE 1	18-APR-2011	29-APR-2011	42-MA2411	`	30-APR-2011	42-MA2411	`,
Amber VOC Vial- NaHSO4 or H2SO4					•			•
GWF4U	GW8U	19-APR-2011	29-APR-2011	4F-MA2411	>	30-APR-2011	4F-MA2411	>
GW28U	GWF2U				•			•
GWF8U	D0P2U							
EP074C: Sulfonated Compounds								
Amber VOC Vial- NaHSO4 or H2SO4								
GW29U	RINSATE 1	18-APR-2011	29-APR-2011	42-MA, -2411	>	30-APR-2011	42-MA, -2411	>
Amber VOC Vial- NaHSO4 or H2SO4								
GWF4U	GW8U	19-APR-2011	29-APR-2011	4F-MA, -2411	>	30-APR-2011	4F-MA, -2411	>
GW28U	GWF2U							
GWF8U	D0P2U							
TRIP 2U	GWF7							
EP074D: Fumigants								
Amber VOC Vial- NaHSO4 or H2SO4								
GW29U	RINSATE 1	18-APR-2011	29-APR-2011	42-MA, -2411	>	30-APR-2011	42-MA, -2411	>
Amber VOC Vial- NaHSO4 or H2SO4								
GWF4U	GW8U	19-APR-2011	29-APR-2011	4F-MA, -2411	>	30-APR-2011	4F-MA, -2411	>
GW28U	GWF2U							
GWF8U	DOP2U							
IRIP 20	GWF/							
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial- NaHSO4 or H2SO4					,			,
GWZ9U	KINSA I E 1	18-APR-2011	29-APR-2011	42-MA, -2411	>	30-APR-2011	42-MA, -2411	>
Amber VOC Vial- NaHSO4 or H2SO4								
GWF4U	GW8U	19-APR-2011	29-APR-2011	4F-MA, -2411	>	30-APR-2011	4F-MA, -2411	>
GW28U	GWF2U							
GWF8U	DOP2U							
TRIP 2U	GWF7							
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial- NaHSO4 or H2SO4								
GW29U	RINSATE 1	18-APR-2011	29-APR-2011	42-MA, -2411	>	30-APR-2011	42-MA, -2411	>
Amber VOC Vial- NaHSO4 or H2SO4								
GWF4U	GW8U	19-APR-2011	29-APR-2011	4F-MA, -2411	>	30-APR-2011	4F-MA, -2411	>
GW28U	GWF2U							
GWF8U	D0P2U							
TRIP 2U	GWF7							

A Campbell Brothers Limited Company



Page Work Order Client Project

: 7 of 13 : EM1143161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 214473 ALBERT PARK GASWORKS

Matrix: WATER					Evaluation:	= Holding time	Evaluation: $x = \text{Holding time breach}$; $\sqrt{} = \text{Within holding time}$.	holding time.
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074G: Trihalomethanes								
Amber VOC Vial- NaHSO4 or H2SO4					,			,
GW29U	RINSATE 1	18-APR-2011	29-APR-2011	42-MA, -2411	>	30-APR-2011	42-MA, -2411	>
Amber VOC Vial- NaHSO4 or H2SO4					,			,
GW740	GW8U	19-APR-2011	29-APR-2011	4F-MA, -2411	>	30-APR-2011	4F-MA, -2411	>
GWE8U	D0P2U							
TRIP 2U	GWF7							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved								
GW29U	RINSATE 1	18-APR-2011	21-APR-2011	25-APR-2411	>	29-APR-2011	F1-MA, -2411	>
Amber Glass Bottle - Unpreserved								
GWF4U	GW8U	19-APR-2011	21-APR-2011	26-APR-2411	>	29-APR-2011	F1-MA, -2411	>
GW28U	GWF2U							,
GWF8U	D0 P2U							
TRIP 2U	GWF7							
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved								
GW29U	RINSATE 1	18-APR-2011	21-APR-2011	25-APR-2411	>	29-APR-2011	F1-MA, -2411	>
Amber Glass Bottle - Unpreserved								
GWF4U	GW8U	19-APR-2011	21-APR-2011	26-APR-2411	>	29-APR-2011	F1-MA, -2411	>
GW28U	GWF2U				•			,
GWF8U	D0 P2U							
TRIP 2U	GWF7							
Amber VOC Vial- NaHSO4 or H2SO4								
GW29U	RINSATE 1	18-APR-2011	29-APR-2011	42-MA, -2411	>	30-APR-2011	42-MA, -2411	>
Amber VOC Vial- NaHSO4 or H2SO4								
GWF4U	GW8U	19-APR-2011	29-APR-2011	4F-MA, -2411	>	30-APR-2011	4F-MA, -2411	>
GW28U	GWF2U				•			•
GWF8U	D0P2U							
TRIP 2U	GWF7							



: 8 of 13 : EM1143161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 214473 ALBERT PARK GASWORKS

Page Work Order

Client

Project

Matrix: WATER					Evaluation:	= Holding time	Evaluation: \times = Holding time breach; \checkmark = Within holding time.	holding time.
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft	10 Draft							
Amber Glass Bottle - Unpreserved								
GW29U	RINSATE 1	18-APR-2011	21-APR-2011	25-APR-2411	>	29-APR-2011	F1-MA, -2411	>
Amber Glass Bottle - Unpreserved								
GWF4U	GW8U	19-APR-2011	21-APR-2011	26-APR-2411	>	29-APR-2011	F1-MA, -2411	>
GW28U	GWF2U				•			
GWF8U	D0 P2U							
TRIP 2U	GWF7							
Amber VOC Vial- NaHSO4 or H2SO4								
GW29U	RINSATE 1	18-APR-2011	29-APR-2011	42-MA, -2411	>	30-APR-2011	42-MA, -2411	>
Amber VOC Vial- NaHSO4 or H2SO4								
GWF4U	GW8U	19-APR-2011	29-APR-2011	4F-MA, -2411	>	30-APR-2011	4F-MA, -2411	>
GW28U	GWF2U							
GWF8U	D0P2U							
TRIP 2U	GWF7							
EP080: BTEXN								
Amber VOC Vial- NaHSO4 or H2SO4								
GW29U	RINSATE 1	18-APR-2011	29-APR-2011	42-MA, -2411	>	30-APR-2011	42-MA, -2411	>
Amber VOC Vial- NaHSO4 or H2SO4								
GWF4U	GW8U	19-APR-2011	29-APR-2011	4F-MA, -2411	>	30-APR-2011	4F-MA, -2411	>
GW28U	GWF2U							
GWF8U	D0P2U							
TRIP 2U	GWF7							



Work Order Project Client

: 9 of 13 : EM1143161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 214473 ALBERT PARK GASWORKS

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 expedded rate. A listing of breaches is provided in the Summary of Outliers.

	Evaluation: $x = Quality Control frequency not within specification; v = Quality Control frequency within specification.$
expected rate. A listing of preaches is provided in the summary of Outliers.	Matrix: WATER

					edding ou	(201024211011	Example of the second of the s
Quality Control Sample Type		Col	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (D0 P)							
Alkalinity by PC Titrator	ED4F7-P	2	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Chloride by Discrete Analyser	ED435G	2	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Dissolved Mercury by YIMS	EG4F5Y	2	24	10.0	10.0	/	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Dissolved Metals by ICP-MS - Suite A	EG424A-Y	2	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Yluoride by PC Titrator	EK434P	2	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Yree CN by Discrete Analyser	EK425G	2	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Hexavalent Chromium - Dissolved	EG454Y	7	19	10.5	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Major Cations - Dissolved	ED49FY	7	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK459G	2	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Nitrite as N by Discrete Analyser	EK457G	2	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Hd	EA445	2	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Reactive Phosphorus as P-By Discrete Analyser	EK471G	2	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Sulfate (Turbidimetric) as SO3 2- by Discrete Analyser	ED431G	2	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Sulfide as S2-	EK485	2	11	18.2	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Total Cyanide By Discrete Analyser	EK426G	2	16	12.5	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Total Dissolved Solids (High Level)	EA415H	2	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
TPH Volatiles/BTEX	EP484	2	15	13.3	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Volatile Organic Compounds	EP473	2	16	12.5	10.0	`	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Weak Acid Dissociable Cyanide By Discrete Analyser	EK428G	3	34	10.0	10.0	`	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED4F7-P	1	24	5.0	2.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Chloride by Discrete Analyser	ED435G	2	24	10.0	10.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Dissolved Mercury by YIMS	EG4F5Y	1	24	5.0	2.0	>	
Dissolved Metals by ICP-MS - Suite A	EG424A-Y	-	24	9.0	2.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Yluoride by PC Titrator	EK434P	1	24	5.0	2.0	>	
Yree CN by Discrete Analyser	EK425G	_	24	5.0	2.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Hexavalent Chromium - Dissolved	EG454Y	_	19	5.3	2.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Major Cations - Dissolved	ED49FY	_	24	5.0	2.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK459G	_	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Nitrite as N by Discrete Analyser	EK457G	_	24	5.0	2.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
PAH/Phenols (GC/MS - SIM)	EP475(SIM)	_	16	6.3	5.0	>	
Reactive Phosphorus as P-By Discrete Analyser	EK471G	1	24	5.0	2.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Sulfate (Turbidimetric) as SO3 2- by Discrete Analyser	ED431G	1	24	5.0	2.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Sulfide as S2-	EK485	_	11	9.1	2.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Total Cyanide By Discrete Analyser	EK426G	1	16	6.3	2.0	/	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Total Dissolved Solids (High Level)	EA415H	~	24	5.0	5.0	`	NEPM 1999 Schedule B(F) and ALS QCSF requirement
TPH - Semivolatile Yraction	EP471	~	24	5.0	2.0	`	
TPH Volatiles/BTEX	EP484	_	15	6.7	2.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Volatile Organic Compounds	EP473	-	16	6.3	5.0	`	NEPM 1999 Schedule B(F) and ALS OCSF requirement



Page Work Order Project Client

: 14 of 13 : EM1143161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 214473 ALBERT PARK GASWORKS

Matrix: WATER				Evaluation	x = Quality Cor	ntrol frequency n	Evaluation: x = Quality Control frequency not within specification;
Quality Control Sample Type		රි	Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	ОС	Regular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS) - Continued							
Weak Acid Dissociable Cyanide By Discrete Analyser	EK428G	2	34	5.0	5.0	`	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Method Blanks (MB)							
Chloride by Discrete Analyser	ED435G	-	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Dissolved Mercury by YIMS	EG4F5Y	_	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Dissolved Metals by ICP-MS - Suite A	EG424A-Y	~	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Yluoride by PC Titrator	EK434P	~	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Yree CN by Discrete Analyser	EK425G	~	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Hexavalent Chromium - Dissolved	EG454Y	_	19	5.3	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Major Cations - Dissolved	ED49FY	~	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK459G	~	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Nitrite as N by Discrete Analyser	EK457G	~	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
PAH/Phenols (GC/MS - SIM)	EP475(SIM)	~	16	6.3	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Reactive Phosphorus as P-By Discrete Analyser	EK471G	_	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Sulfate (Turbidimetric) as SO3 2- by Discrete Analyser	ED431G	_	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Sulfide as S2-	EK485	~	11	9.1	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Total Cyanide By Discrete Analyser	EK426G	_	16	6.3	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Total Dissolved Solids (High Level)	EA415H	~	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
TPH - Semivolatile Yraction	EP471	_	24	5.0	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
TPH Volatiles/BTEX	EP484	_	15	6.7	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Volatile Organic Compounds	EP473	_	16	6.3	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Weak Acid Dissociable Cyanide By Discrete Analyser	EK428G	2	34	5.0	5.0	`	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED435G	1	24	5.0	5.0	>	ALS QCSF requirement
Dissolved Mercury by YIMS	EG4F5Y	_	24	5.0	5.0	>	ALS QCSF requirement
Dissolved Metals by ICP-MS - Suite A	EG424A-Y	_	24	5.0	5.0	>	ALS QCSF requirement
Yluoride by PC Titrator	EK434P	↽	24	5.0	5.0	`	ALS QCSF requirement
Yree CN by Discrete Analyser	EK425G	_	24	5.0	5.0	>	ALS QCSF requirement
Hexavalent Chromium - Dissolved	EG454Y	_	19	5.3	5.0	>	ALS QCSF requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK459G	_	24	5.0	5.0	>	ALS QCSF requirement
Nitrite as N by Discrete Analyser	EK457G	_	24	5.0	5.0	>	ALS QCSF requirement
Reactive Phosphorus as P-By Discrete Analyser	EK471G	_	24	5.0	5.0	>	ALS QCSF requirement
Sulfate (Turbidimetric) as SO3 2- by Discrete Analyser	ED431G	_	24	5.0	5.0	>	ALS QCSF requirement
Total Cyanide By Discrete Analyser	EK426G	↽	16	6.3	5.0	`	ALS QCSF requirement
TPH Volatiles/BTEX	EP484	↽	15	6.7	2.0	`	ALS QCSF requirement
Volatile Organic Compounds	EP473	~	16	6.3	2.0	`	ALS QCSF requirement
Weak Acid Dissociable Cyanide By Discrete Analyser	EK428G	2	34	5.0	5.0	>	ALS QCSF requirement



Page : 11 of 13

Work Order : EM1143161 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES
Project : 214473 ALBERT PARK GASWORKS

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 0.S EPALAPHALAS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Hd	EA445	WATER	APHA 21st ed. 3544 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(F) (Appdx. 2)
Total Dissolved Solids (High Level)	EA415H	WATER	APHA 21st ed. L2534C 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 184+/-5C. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Alkalinity by PC Titrator	ED4F7-P	WATER	APHA 21st ed. UZF24 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 3.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Sulfate (Turbidimetric) as SO3 2- by Discrete Analyser	ED431G	WATER	APHA 21st ed. U8544-SO3 Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO3 suspension is measured by a photometer and the SO3-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Chloride by Discrete Analyser	ED435G	WATER	APHA 21st ed. UB544 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 384 nm APHA 21st edition seal method 2 417-1-L april 244F
Major Cations - Dissolved	ED49FY	WATER	APHA 21st ed.UF124; 0SEPA SW 836 - 6414 The ICPAES technique ionises the 4.35um 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(F) (Appdx. 2)
Dissolved Metals by ICP-MS - Suite A	EG424A-Y	WATER	(APHA 21st ed.UF125; 0 SEPA SW836 - 6424UALS QWI-EN/EG424): Samples are 4.35 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 Uwhich separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by YIMS	EG4F5Y	WATER	AS F554UAPHA 21st ed. F112 Hg - B (Ylow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 4.35 um filtered prior to analysis. YIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Hexavalent Chromium - Dissolved	EG454Y	WATER	APHA 21st ed.UF544 Cr-B. Samples are 4.35 um filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Yree CN by Discrete Analyser	EK425G	WATER	APHA 21st ed.UB544-CN-C&N Yree Cyanide is determined on samples after distillation using a pyridine- barbituric acid colouring reagent followed with an Discrete Analyser finish. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Total Cyanide By Discrete Analyser	EK426G	WATER	APHA 21st ed. U8544-CN-C & N Total Cyanide is determined from aqueous solutions after distillation with sulphuric acid. The resultant distillate is then captured in a caustic absorber solution followed by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)



Page : 12 of 13
Work Order : EM1143161 Amendment 1
Client : ENVIRONMENTAL EARTH SCIENCES
Project : 214473 ALBERT PARK GASWORKS

The state of the s			
Analytical Methods	Memod	Matrix	Wernoa Descriptions
Weak Acid Dissociable Cyanide By Discrete Analyser	EK428G	WATER	APHA 21st ed.U3544-CN-C&N WAD Cyanide is determined from aqueous solutions after distillation with acetic acid. The resultant distillate is then captured in a caustic absorber solution followed by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Yluoride by PC Titrator	EK434P	WATER	APHA 21st ed.U8544 Y-C CDTA is added to the sample to provide a uniform ionic strength backgroundUadjust pHU and break up complexes. Yluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Ammonia as N by Discrete analyser	EK455G	WATER	APHA 21st ed. W544-NHF G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Ammonium as N	EK455G-NH3	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.U8544-NHF G. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Nitrite as N by Discrete Analyser	EK457G	WATER	APHA 21st ed.U8544-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Nitrate as N by Discrete Analyser	EK458G	WATER	APHA 21st ed.U8544-NOF- Y. Nitrate is reduced to nitrite by way of a cadmium reduction column 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(F) (Appdx. 2)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK459G	WATER	APHA 21st ed. U3544-NOF- Y. Combined oxidised Nitrogen (NO2+NOF) is determined by Cadmium Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Reactive Phosphorus as P-By Discrete Analyser	EK471G	WATER	APHA 21st ed.U3544-P Y 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(F) (Appdx. 2)
Sulfide as S2-	EK485	WATER	APHA 21st ed.U8544-S2- D Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. After the supernatant is discarded the resultant precipitate is then coloured using methylene blue indicator and measured using 0 V-VIS detection at 663nm. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Ionic Balance by PCT DA and ICPAES	EN455 - PG	WATER	APHA 21st Ed. 14F4Y. The Ionic Balance is calculated based on the major Anions and Cations. The major anions include AlkalinityUchloride and Sulfate which determined by PCT and DA. The Cations are determined by ICPAES. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
TPH - Semivolatile Yraction	EP471	WATER	0SEPA SW 836 - 8415A The sample extract is analysed by Capillary GC/YID 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(F) (Appdx. 2)
Volatile Organic Compounds	EP473	WATER	0SEPA SW 836 - 8264B 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(F) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP475(SIM)	WATER	0SEPA SW 836 - 8274D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
TPH Volatiles/BTEX	EP484	WATER	0 SEPA SW 836 - 8264B 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(F) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions



ALS

: 1F of 13 : EM1143161 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 214473 ALBERT PARK GASWORKS

Page Work Order

Client Project

Preparation Methods	Method	Matrix	Method Descriptions
Yree Cyanide	EK425-PR	WATER	APHA 21st ed.U8544 CN- C&N. The sample is distilled at natural pH. The CN is trapped in a caustic solution and a quanitified by colourimetry on YIA. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Total Cyanide	EK426-PR	WATER	APHA 21st ed.U8544 CN- C&N. The sample is distilled with H2SO3 releasing all bound cyanides as HCN. The CN is trapped in a caustic solutionUand quanitified by colourimetry on YIA. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Weak Acid Dissociable Cyanide	EK428-PR	WATER	APHA 21st ed.US544 CN-1&N. The sample is distilled with Acetic acidUselectively releasing the weakly bound metal cyanides as HCN. The CN is trapped in a caustic solutionUand quanitified by colourimetry on YIA. This method is compliant with NEPM (1999) Schedule B(F) (Appdx. 2)
Separatory Yunnel Extraction of Liquids	ORG13	WATER	0 SEPA SW 836 - F514B 544 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 64mL DCM for each extract. The resultant extracts are combinedUdehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(F) (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 34 mL VOC vial for sparging.



: ENVIRONMENTAL EARTH SCIENCES EM1143161 Amendment 1 : 13 of 13 Work Order Project Client

214473 ALBERT PARK GASWORKS

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 0 SEPA SW836 or ALS-QWI/EN/F8 (in the absence of specific 0 SEPA 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	Client Sample ID	Analyte	CAS Number Data	Data	Limits Comment	Comment
Laboratory Control Spike (LCS) Recoveries							
EP473A: Monocyclic Aromatic Hydrocarbons	2476525-441	-	n-Propylbenzene	14F-65-1 124 %	124 %	74-124%	74-124% Recovery greater than upper control limit
EP473A: Monocyclic Aromatic Hydrocarbons	2476525-441		1.3.5-Trimethylbenzene	148-67-8 119 %	119 %	71-119%	71-119% Recovery greater than upper control limit
Matrix Spike (MS) Recoveries							
ED431G: Sulfate (Turbidimetric) as SO3 2- by DA	EM1143121-442	Anonymous	Sulfate as SO4 - Turbidimetric	13848-79-8 Not Determi	Not Determined	-	MS recovery not determined, background level greater than or equal to 4x spike
							level.
EK459G: Nitrite plus Nitrate as N (NOx) by Discrete Ar EM1143121-442	r EM1143121-442	Anonymous	Nitrite + Nitrate as N	1	Not	1	MS recovery not determined, background
				_	Determined		level greater than or equal to 4x spike
							level.

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

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	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)		Date extracted	Date extracted Due for extraction	Days	Date analysed	Date analysed Due for analysis	Days
				overdue			overdue
EA005: pH							
Clear Plastic Bottle - Natural							
GW29		1	1		21-APR-2411 18-APR-2411	18-APR-2411	ო
Clear Plastic Bottle - Natural							
GWF4U	GW8U	1	1	1	21-APR-2411 19-APR-2411	19-APR-2411	7
GW28U	GWF2U						
GWF8U	D0P2U						
GWF7							

Outliers: Frequency of Quality Control Samples

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

No Quality Control Sample Frequency Outliers exist.





Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: EM1104286	:00	f 13_1540
Amendment	<u></u>		
n R mC	f ENVIRONMENTAL EARTH SCIENCES	retLyeCyi	f EmbyLmu : m@Rsc vDgvLm3M: R LRym
n Lm@AC	f MV3: I JS 3W MEh	n Lm@AC	fneyLRd eRg.
I 00/c gg	f BKBX53FFTY	I 00y. gg	f 431:g@FF2/Ch-ymoDeP31 \$n3 RgGeRe3/1j1
	sXX, hnVI U3/38/p3/7h, VI r3/3/011		
E@evP	f Ozen:gw::gw3 ↔	E@evP	f AeyLmBeng. w eng: mDxyLnBuLu
,:PLm	f 91 1381 aj 11 1 1	, : P Lm	f 9I 1@@ T483BI 0a
seAgru v.P	f 91 130Y381 aj 1a44	s eAgvu vP	f 91 1@@T48381 01
yLz AC	f F100j 43 r 2EV, 3 I VK33I h31 XVKh	Qn 3: D. P	f NE M3188833h A: CRP: 22 (17) 3-m C3 rh 32 nh 17-3, qRy, u:m C
XyO. yanRu t : y			
n ആ @3നുപ t : y		ceC3heu - Pg3V: A vD O	f F1@ V@011
heu - Py		AggR & eC	f YO@II U@011
h©			
		NLBLAgeu - P.g3, A. A. O.	fYT
QRLC3mut:y	f ME/01T/113 Y	NLBLAgeu - Pgæmerg: O	fYT

. 193 y. - Ly 3 gR: 193 O g3 emi 3 - y. DLRg3 y. - Ly (2g) 3 6 vC 3 Cy 3 y, b y, m/r. 13 V: 9 Ry 3 e- - 12 C 3 geu - 12 (g) 3 eg3 gR u v (10 CM3 | 173 - eo; g3 LK3 Cy g y, - Ly 3. e. 13 t: m/s A: Ak: O8 em O8 e- - y LD CM3 h y. P.eg: B

, . $\mathrm{g31:y00AeC3LB}$ } } The pagaline in the constant of th

- G:m yeRhLuu:m@
 - ImeR © AeBV: gRRg
- hRyLoeC3nLmQLB w vg

, ig3 OLARU:mG.eg3 t∷m3:PAQLmAellP3 gvom O3 ti3 C:3 eRCLyA+:O3 gvome Cyv g3 vnOAe CO3 t:R6B3 EPAQLmA3 gvom vno3.eg3 t∷m Aewy Cal Ramaylu - Remai 30 K3 yla Cay, qa- : Aby Cam 1713 s V3 ev Carl 18 Signatories NI, I 3 AAy. O.C.O3 et Lye.C.yi 3aFT

h: mŁyՖŁyoemAh.: u gC M: @g3: eu 3: eQ y r et LyeCyi 3h LLyOmeCy h: mŁyh: u 以LR® 勁gg/Ru: m紹.: u gC h: mŁyՖŁyoemA勁gg/Ru: mßn.: u gC r et LyeCyi 3Memeo: y h: mŁy&yoemAh.: u gC	The contract of the contract o		
h: mŁ/鄧什,oem4h.: u 似C M: @閱3:eu 3:eO y r et LyeŒ,i 31LL,OmeŒ,y h: mŁ/ħ: u ÆL@P: 鄧吸內-: u 似C h: mŁ/筯代,oem4敬gQR-u: n俹-: u 似C r et LyeŒ,i 3Memeo: y h: mŁ/炎 yoem43n.: u 似C	Signatories	Position	Accreditation Category
M: @g3:eu 3:eQ y ret LyeŒyi 31.LLyOmeŒy h: mŁyAn:u 忆LRGP: 36gyRu:mCan.:u vgC h: mŁy36LyoemA36gyRu:mCan.:u vgC ret LyeŒyi 3Memeo: y h: mŁy8KyoemA3n.:u vgC	c Velm&: ymemCL	h: mŁy38nLyoemA3n . : u vgC	M: RLRym 38/LyoemAg
ret Lye企yi 31-LlyOme位y h: mLy3n: u 忆LPGP: 36ggRu: mGn.: u vgC l: mLy36LyoemA36ggRu: mGn.: u vgC ret Lyeûyi 3Memeo: y h: mLy3KyoemA3n.: u vgC	EyA3n.eR	M: @@3 : eu 3 : eO y	M: PLRym 38/LyoemAg
h: mŁyðh: u 以上局份: 勁g以引u:mūh.: u ·gC h: mŁyðh: yoemA勁g以引u:mūh.: u ·gC ret Lyeūyi 3Memeo: y h: mŁyðk yoemA幼.: u ·gC h: mŁyðk yoemA幼.: u ·gC	H: yu em8 vm	ret Lye©yi 31 LLyOme©y	M: PLRym 38/LyoemAg
v h:mLy38nLyoemA38ngQPu:mCn.:uvgC ret LyeCLyi3Memeo:y h:mLy3KyoemA3n.:uvgC	Nemai 3d emo	h: mLyh: u VI-ROP 38ggRu: mCh.: u ygC	M: RLRym X yoem/g
r et LyeŒyi Memeo: y h: mŁyð⁄ yoemðān .: u vgC	NvkkðnC-mz 6 gkv	h: mLyanLyoemAangGRu: man.: u vgC	M: PLRym 38/LyoemAg
h: mty8XyoemA3n.: u vgC	h C D m8MAGyeC	r et LyeCyi Memeo: y	M: RLRym X yoem/g
	5 vrot vr8 vn	h: mŁyX yoemA3n.: u ygC	M: RLRym 3X yoem4g

I AAy. O/C COBLYSALu - RemA: 35 /C 3

®X/Œn3i0FTB

WORLD RECOGNISED ACCREDITATION

eAAy. Ov@OLm3y. qRyy. u : mgB eAALyOemA: 35 vC 3NI, 13

, . vg3Q_ARu : m3g3ggR: O3m8

43:g@用VCh-ymoDeP3181 Bg@Ra3/1j1 Tel. +61-3-8549 9600 3sxx图1 (@@1483I 013www.alsglobal.com A Campbell Brothers Limited Company



F ENJ SYXNMEN, I rÆI V, H3nn ÆNn Eh F100j 43 r2EV, 3 I VK3GI h3d XVKh EM1104Fal 3 u:mQu:mC3 d Lyk3XyO.y JLz AC n R mC

General Comments

...3 enne Pobe B-y LA CRy 93 Rg: 03 ti3 C: 3 Emby Lm : m B B C Doy Lm 8. e D 3 t:: m 8 D D R-: 03 b Lu 3: 9 G t Rg: 03 v C y m C y m C u m B 38 S. L Rg: 3 5 g RA 3 e 9 3 C L g: 3 - R Rg: 03 ti3 C: 3 7 h E 1 p3 1 H p3 1 h 3 e m 38 N E L Rg: O. D. R.-: OB J.L.A: OBy. gaby. 3 u - Ri: Obmooc: Obj. gib. mar. 3.160L. ARu: mc Object Cobject Object gab. 134R maj. q.R. gob.

d . : y; 31 Lig@k; 30. C yu vne QLm8 eg3 : ; m3 : ydLyu : Q3k; gR@gBy; 3k; - LyC O3Lm2e 30ji 35 : vo. Ca egygB

d . : y ЭЗ, - LyCOR ggCont(<)3, gRBg3 vo . ; yConEc 3 XVpC ga ei 3 : CR R3 yu ey gae u - P 3 x9eADO: g@CORRC memOLyangRum Rum R3eu - P 31.yeme P ggB

d.: y. X:3 X V 3.1883, - LyC Og, gRROUb yggLu 3,@mCeyOR X V AC yga ei 3: 30 31 LyGAy, 34 LnC mgAng Ruha mageu - P.3y ORY OB: vo. G. u - RI: O.3 ya egwanc yb y m'a B

d . : migeu - Provous : 3mills, w. eQ. migg3nLG yLDQ OB i 35 : 348 miggeu - ProvOcc gasy, 3. L6 mis VCLRQB 30: 3Mu - Lm misses 5: g. singlemink gasc : 3mg emink gasc : 3mg emin

n I h 3NRu t : y43 i h 3y ogg 3 m2u t : ydyLu 3D@t eg: 3u evm@m C3i i 3u : u v4el3 t g@eAg3i : yD< g溫 : 3u : u v4el3 t g@eAg3i : yD< ga : su v4el3i L 3yeAg3i : yD</br> rXV3=3 vu valdsy. - Lyomo

13. 193. gRagollu - RCObylu 3mODOReRemPCOCCAC mgaalyat LDC: 3PD RLby. - Lyom

30/5/11: This report has been amended and re-released to allow the reporting of additional analytical data.

EG035F: Positive mercury results for EM1104286 # 2 - 5, 16 - 17, and 19 - 21 were confirmed by re-preparation and re-analysis.

EP080/074/075(SIM): Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.

Insufficient time provided to perform sulphide analysis within holding time.

Ionic Balance out of acceptable limits due to analytes not quantified in this report.

Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate and major cations - calcium, magnesium, potassium, sodium and ammonia as N..

Samples were filtered through a 0.45um filter prior to the dissolved metals analysis.



eo: f 43.bsto d Lyk3xyQ, y f EM1104F n R n C f ENJ S/X J y_Z AC f F100j 43

f 44.bato f EM104Fal 3 u:mQu:m偽l f ENJS/XNMEN, I r至l V, H3n 또Nn Eh f F100j 43 r 2EV, 3 I VK3Gl h為 XVKh

Analytical Results

hRt @egw: WATER		Ö	Client sample ID	GW3	GW4	GW9	GW10	GW11
	Cli	ent sampli	Client sampling date / time	F0@ V@0113Tf00	F0@ V@0113Tf00	18@ V@01131Tf00	F0@ V@01131Tf00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-001	EM1104286-002	EM1104286-003	EM1104286-004	EM1104286-005
EA005: pH								
pH Value		0.000	- H3º mC	6.60	7.11	6.65	5.23	5.55
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	G\$\@10@10	⊥	n o/r	3410	1010	548	290	288
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	c MX @10@01	-	n o/r		₹	₹	7	<u>۸</u>
Carbonate Alkalinity as CaCO3	Ya1F@F@	-	n o/r	₹	₹	₹	₹	۲
Bicarbonate Alkalinity as CaCO3	j 1@F@	_	n o/r	242	307	86	80	10
Total Alkalinity as CaCO3		-	n o/r	242	307	86	80	10
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	by DA							
Sulfate as SO4 - Turbidimetric	14a0a@8@	-	n o/r	2070	222	54	303	93
ED045G: Chloride Discrete analyser								
Chloride	11 aaj @ 0@	-	u o/r	64	25	150	65	54
ED093F: Dissolved Major Cations								
Calcium	j 440@0@	-	n o/r	232	20	4	4	<u>۲</u>
Magnesium	j 4Y8@T@	1	u o/r	43	20			^
Sodium	j 440@Y@	_	u o/r	62	180	168	192	68
Potassium	j 440 @ 8@	1	u o/r	16	26	4	က	-
EG020F: Dissolved Metals by ICP-MS								
Aluminium	j 4F8 @ 0@	0801	u o/r	<01801	<0801	<0101	0.01	0.03
Arsenic	j 440@a@	0001	u o/r	0.010	0.120	0.004	0.006	0.002
Cadmium	j 440@Y@	0E0001	u o/r	<050001	<0E0001	<05001	<018001	<000001
Cobalt	j 440@a@	0001	u o/r	0.021	0.001	<0B01	0.001	<0B001
Copper	j 440@0@	0001	u o/r	0.001	0.006	0.001	0.007	0.002
Lead	j 4Y8 @ F@	0001	u o/r	<01801	0.001	<0 B 01	<05001	<08001
Manganese	j 4Y8 ® @	0001	u o/r	4.18	0.010	0.007	0.022	0.002
Nickel	j 440 @ F@	0001	u o/r	0.014	0.002	0.004	0.037	<00001
Selenium	j j aF @ 8∰	0801	u o/r	<0.801	<0801	<0801	<0801	<0.001
Zinc	j 440@ @	0B0T	n o/r	0.017	<0BOT	0.014	0.032	<0B00T
Boron	j 440@F@	OBOT	u o/r	1.30	0.05	0.45	0.18	0.26
Iron	j 4Y8@8@	OBOT	u o/r	27.0	0.23	<0B07	<0B)T	<0B)
EG035F: Dissolved Mercury by FIMS								
Mercury	j 4Y8 @ j @	0E0001	u o/r	<000001	0.0002	0.0001	0.0002	0.0002
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	1aT40@8@	0801	u o/r	<0801	<0圆1	<01801	<0891	<0颐1
EK025G: Free cyanide by Discrete Analyser	er.							
Free Cyanide		0004	u o/r	0.005	0.100	<01004	<0B04	<00004
TOOM A Change of the Control of the Toom of the Control of the Con	į							



eo: d Lyk3XyO.y n R mC yLz AC

f T3_LB40 f EM1104Fal 3 u∶mQu∶mC3 f ENJS/XNMEN, I rŒl V, H3nn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3t XVKh

Analytical Results

hRt @e∳x: WATER		Clien	Client sample ID	GW3	GW4	GW9	GW10	GW11
	Clie	nt sampling	Client sampling date / time	F0@ V@0113Tf00	F0@ V@0113Tf00	18@ V@01131Tf00	F0@ V@01131Tf00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-001	EM1104286-002	EM1104286-003	EM1104286-004	EM1104286-005
EK026G: Total Cyanide By Discrete Analyser - Continued	ontinued							
Total Cyanide	Tj @F@	00004	n o/r	0.070	0.320	<01304	<0B004	0.009
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser	crete Anal	yser						
Weak Acid Dissociable Cyanide		0004	u o/r	0.009	0.159	<0B004	<05004	<05004
EK040P: Fluoride by PC Titrator								
	11 8a4@a@	08	n o/r	1.3	9.0	0.4	<08	<0B
EK055G: Ammonia as N by Discrete Analyser								
	j I I 4@1@	0801	n o/r	099	0.29	0.52	0.43	0.04
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N		0801	u o/r	<01801	0.09	0.01	<01801	0.01
EK058G: Nitrate as N by Discrete Analyser								
	14j 8j @T@	0801	n o/r	<01301	15.7	21.0	<0.001	0.02
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser	rete Analy	ser						
Nitrite + Nitrate as N		0801	u o/r	<01801	15.8	21.0	<0801	0.04
EK071G: Reactive Phosphorus as P by discrete analyser	analyser							
Reactive Phosphorus as P		0801	n o/r	<01301	90.0	<01301	<0.001	<0801
EK085M: Sulfide as S2-								
Sulfide as S2-	1a48l@T@	08	u o/r	<0BI	<0Bi	<0B	<0B	<0B
EN055: Ionic Balance								
^ Total Anions		0801	n : q/r	49.8	12.4	7.09	8.31	3.66
^ Total Cations		0801	n : q/r			7.83	8.90	3.89
Total Cations		0801	u : q/r	54.9	2.05			
^ Ionic Balance		0801	%		1.10	4.92	3.42	3.06
Ionic Balance		0801	%	4.61				
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100@F@	_	ho/r	<⊤>	L∨	↓	≺	
	8a@F@	_	ho/r	<⊤>	>		≺	
n-Propylbenzene	10Y@T@	<u></u>	ho/r	_>		T>		T>
1.3.5-Trimethylbenzene	10a@j @	_	ho/r	>	>	حل	۲	
sec-Butylbenzene	1YT@a@	⊢	ho/r	_>			T>	T>
1.2.4-Trimethylbenzene	8T@Y@	<u></u>	ho/r	_≻			T>	T>
tert-Butylbenzene	8a@ @	<u></u>	ho/r					T>
p-IsopropyItoluene	88	-	no/r	Ļ	₽	₽	₽	⊢
n-Butylbenzene	104@1@	-	ho/r	_≻	⊢	₽	∀	⊢
EP074B: Oxygenated Compounds								
	10a@T@	T0	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
2-Butanone (MEK)	j a @ Y@	T0	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><70</th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><70</th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><70</th></t0<></th></t0<>	<t0< th=""><th><70</th></t0<>	<70



60: f | 1.1.0840
d Lyk3Y,Q,y f EM110
nR mC f ENJ SV
yL.z AC f F100] v

f L 乳的40 f EM1104Fal 3 u:mOu:m33 f ENJS/XNMEN, I r歪l V, H3nn 歪Nn Eh f F100j 43 r 2 EV, 3 I V K33l h3t XVKh

Analytical Results

Analytical Nesalis								
h R @leow: WATER		Clie	Client sample ID	GW3	GW4	GW9	GW10	GW11
	Clie	ent samplin	Client sampling date / time	F0@ V@0113Tf00	F0@ V@0113Tf00	18@ V@01131Tf00	F0@ V@0113Tf00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-001	EM1104286-002	EM1104286-003	EM1104286-004	EM1104286-005
EP074B: Oxygenated Compounds - Continued	nued							
4-Methyl-2-pentanone (MIBK)	10a@0@	DT	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
2-Hexanone (MBK)	Т81@а@	Т0	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
EP074C: Sulfonated Compounds								
Carbon disulfide	j T@T@	⊢	ho/r	<⊤			<	Τ>
EP074D: Fumigants								
2.2-Dichloropropane	T84@0@	_	ho/r	L	₽	₽	₽	_^
1.2-Dichloropropane	j a @ @	-	ho/r	>	L	₽	⊢ >	_>
cis-1.3-Dichloropropylene	1001 1@1@	⊢	ho/r	>	L		>	L>
trans-1.3-Dichloropropylene	100l 1@F@	_	ho/r	≺T	Ţ≻	≺T	≺T	>
1.2-Dibromoethane (EDB)	10I @Y@	⊥	ho/r	<t< th=""><th>L</th><th>₹</th><th>L</th><th>⊢∨</th></t<>	L	₹	L	⊢ ∨
EP074E: Halogenated Aliphatic Compounds	nds							
Dichlorodifluoromethane	j T@1	DT	ho/r	<t0< th=""><th><t0< th=""><th><π><</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><π><</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<π><	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Chloromethane	j 4 @ @	2	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Vinyl chloride	j T@1@	10	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Bromomethane	j 4@Y@	2	ho/r	<t0< th=""><th><t0< th=""><th>oT></th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th>oT></th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	oT>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Chloroethane	j T 6 00	2	ho/r	<t0< th=""><th><t0< th=""><th>oT></th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th>oT></th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	oT>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Trichlorofluoromethane	j T@8@	으	ho/r	<t0< th=""><th><t0< th=""><th>oT></th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th>oT></th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	oT>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
1.1-Dichloroethene	j T@T@	⊢	ho/r	_≻	⊢	₽	⊢	⊢ ∨
lodomethane	j 4 @ a @	-	ho/r	_≻	⊢	₽	⊢	_>
trans-1.2-Dichloroethene	1TI @0@	⊢	ho/r	>	L	₽	⊢ ∨	⊢ ∨
1.1-Dichloroethane	j T@4@	⊢	ho/r	_≻	⊢	₽	⊢	⊢ ∨
cis-1.2-Dichloroethene	1TI @8@	-	ho/r	>	⊢	_	>	_>
1.1.1-Trichloroethane	j 1@T@	-	ho/r	>	V	\	>	_>
1.1-Dichloropropylene	T Y@a@	⊢	ho/r	>	⊢	₽	>	_>
Carbon Tetrachloride	DA IL	⊢	ho/r	_≻	⊢	₽	⊢	⊢ ∨
1.2-Dichloroethane	10j @	⊢	ho/r	_	⊢	₽	⊢	⊢ ∨
Trichloroethene	j 8 @ 1@	⊢	ho/r		Τ>	T>	T>	⊢ ∨
Dibromomethane	j 4@T@	⊢	ho/r	_≻	⊢	₽	⊢	⊢ ∨
1.1.2-Trichloroethane	j 8 @ 0@	-	ho/r	_≻	⊢	₽	⊢	⊢ ∨
1.3-Dichloropropane	14F@a@	⊢	ho/r		Τ>	T>	T>	_>
Tetrachloroethene	1Fj @a@	⊢	ho/r	_≻	⊢	₽	⊢	⊢ ∨
1.1.2-Tetrachloroethane	■ YO®O®	-	ho/r	_≻	⊢	₽	⊢	⊢ ∨
trans-1.4-Dichloro-2-butene	11000 @	-	ho/r	L≻	⊢	₽	⊢	⊢ ∨
cis-1.4-Dichloro-2-butene	14j 1 @1@	-	ho/r	⊢ ≻	₽	₽	⊢	⊢ ∨
1.1.2.2-Tetrachloroethane	j 8 @ 4@	-	ho/r	L>	⊢	₽	⊢	⊢ ∨
1.2.3-Trichloropropane	81 @a@	_	ho/r	>	L	✓	-≺	_>
Pentachloroethane	j @1@	⊢	ho/r	<⊤>	L	≺	-≺_	_>
1.2-Dibromo-3-chloropropane	81 @F@	⊢	ho/r	≺T	Ţ≻	≺T	≺T	>

A Campbell Brothers Limited Company



f j 3∟1340 f EM1104Fal 3 u∶mQu∶m©a f ENJS/XNMEN, I rŒl V, H3nn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3t XVKh eo: d Lyk3XyO.y n R mC yLz AC

Analytical Results

			L					
hRi @elojx: WATER		Clie	Client sample ID	GW3	GW4	GW9	GW10	GW11
	Clie	ent samplir	Client sampling date / time	F0@ V@0113Tf00	F0@ V@0113Tf00	18億 V億01131下100	F0@ V@0113Tf00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-001	EM1104286-002	EM1104286-003	EM1104286-004	EM1104286-005
EP074E: Halogenated Aliphatic Compounds - Continued	ds - Continued							
Hexachlorobutadiene	aj @a@	⊢	ho/r	_	_>	_>	>	
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	10a@0億	⊢	ho/r	>	_>	>	>	
Bromobenzene	10a@ @	-	ho/r	₽	⊢	⊢	⊢	⊢ ∨
2-Chlorotoluene	8168	F	ho/r	_≻	⊢		>	_>
4-Chlorotoluene	10I @Y@	-	ho/r	⊢ >	⊢	⊢		
1.3-Dichlorobenzene	T41@Y@	-	ho/r	⊢	⊢	⊢	_	⊢ ∨
1.4-Dichlorobenzene	101	F	ho/r	_≻	⊢	_>	>	_>
1.2-Dichlorobenzene	8T@0@	⊢	ho/r	-	_>	_>	>	_>
1.2.4-Trichlorobenzene	1F0@F@	-	ho/r	⊢	⊢	⊢		⊢ ∨
1.2.3-Trichlorobenzene	aj @1@	-	ho/r	₽	⊢	⊢	⊢	⊢ ∨
EP074G: Trihalomethanes								
Chloroform	- j	-	ho/r	_	>	>		_>
Bromodichloromethane	(a)	_	ho/r			>	_	>
Dibromochloromethane	1F4@a@	-	ho/r	₽	⊢	⊢	⊢	⊢ ∨
Bromoform	j Tætæ	_	ho/r		L	L≻	⊥ ≻	_≻
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ocarbons							
Naphthalene	8166000	180	ho/r	1.2	<180	<180	<180	<188
Acenaphthylene	F0a@ @	189	ho/r	×18	1.0	× 18	×18	× 18
Acenaphthene	aY@F@	189	ho/r	<18	<180	<18	<18	<188
Fluorene	al @Y@	9	ho/r	1.0	<180	× 8	× 18	× 18
Phenanthrene	aT@1@	9	ho/r	3.4	6.2	× 18	×18	× 188
Anthracene	1F0@F@	189	ho/r	1.1	2.1	<18	× 18	< 180
Fluoranthene	F01 @4@	180	ho/r	2.4	8.4	<150	<18	<188
Pyrene	1F8@0@	180	ho/r	2.0	7.8	<18	<18	<188
Benz(a)anthracene	TI @T@	180	ho/r	<18	2.8	×18	<18	× 188
Chrysene	F1a@1@	180	ho/r	<18	2.3	<150	<18	<188
Benzo(b)fluoranthene	F0T@8@	189	ho/r	<18	2.7	× 18	× 18	× 188
Benzo(k)fluoranthene	F0j @a@	180	ho/r	<18)	1.0	<18	<150	<118
Benzo(a)pyrene	T0@F@	08	ho/r	<0 B	2.2	<0B	<0B	<0B
Indeno(1.2.3.cd)pyrene	1870880	180	ho/r	<18	1.4	<18	<18	<150
Dibenz(a.h)anthracene	TY@0@	189	ho/r	<18	<180	× 18	<18	× 188
Benzo(g.h.i)perylene	181@4@	180	ho/r	<18	1.4	<150	<18	<188
^ Sum of polycyclic aromatic		08	ho/r	11.1	39.3	<18	<18	<18
hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons	S							
C6 - C9 Fraction		F0	ho/r	<f0< th=""><th><f0< th=""><th><f0< th=""><th><f0< th=""><th><f0< th=""></f0<></th></f0<></th></f0<></th></f0<></th></f0<>	<f0< th=""><th><f0< th=""><th><f0< th=""><th><f0< th=""></f0<></th></f0<></th></f0<></th></f0<>	<f0< th=""><th><f0< th=""><th><f0< th=""></f0<></th></f0<></th></f0<>	<f0< th=""><th><f0< th=""></f0<></th></f0<>	<f0< th=""></f0<>
C10 - C14 Fraction		10	ho/r	420	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>

A Campbell Brothers Limited Company



84.5 91.2 125 115 101

15.2 27.9 73.3

106 108 98.0

F0@ V@0113Tf00 EM1104286-005

510 260 770 <100

670 120 790 **GW11**

f EM1104Fal 3 u : mQu : mGl f ENJSXXNMEN. I ræl V. H3n Æl

d Lyk3xyO.y

n R mC

f ENJS/XNMEN, I rÆI V, H3nn ENnEh f F100j 43 r2EV, 3 I VK33I h3l XVKh

Analytical Results

FO@ V@0113Tf00 EM1104286-004 **GW10** <100 **130** < 100 81.5 37.8 89.0 78.4 93.8 106 96.4 91.1 76.3 Å. Å. 130 00 00 ᄼᇚ 89.1 Ϋ́ ₩ 4 Å. Ÿ ∀ 18@ V@01131Tf00 EM1104286-003 GW9 <100 <100 <100 <100 <100 95.2 87.4 35.2 69.2 8.06 6 5 5 71.9 74.1 89.8 Ĉ Ĉ 73.4 109 ₩ ₩ V ₩ ₩ Å ₹ ∀ FO@ V@0113Tf00 EM1104286-002 GW4 570 510 1080 <100 910 290 1200 90.1 81.8 59.2 83.0 72.9 85.6 90.3 102 95.2 은 단 만 86.4 Ϋ́ 쑤 **₽** ₩ ү \ Г Ÿ ∀ F0億 V億0113Tf00 EM1104286-001 GW3 2010 1440 150 610 1300 <100 82.4 88.4 52.3 95.2 71.0 85.1 88.8 92.3 89.8 81.2 € € 78.7 ~ ₩ [∨] ო 4 ო ს ∨ Client sample ID Client sampling date / time Unit ho/r ho/r po/r po/r po/r ho/r ho/r ho/r ho/r ho/r ho/r ho/r ho/r ho/r % % % % % % % % % % % % LOR EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft 100 100 5 5 5 8 8 8 요 요 8 8 8 8 8 8 ш ш 8 8 8 ш ш ш YF1@0@ 1j 0l 0@j @ F0Yj @j @ j 1@PY∰ 8T@ @ 81600 10a@a@310l@F@ 1Y1Fj @a@ 8Y8T1@Y@ CAS Number 10a**യു**a@ 100@1@ 17Y0億0億 1] 01 0@ @ FOYj 📵 @ 4 00000 11a@8@ 1j 18@| @ 1j 1a@1@ 410000 EP080/071: Total Petroleum Hydrocarbons - Continued EP075(SIM)S: Phenolic Compound Surrogates EP080S: TPH(V)/BTEX Surrogates ^ C6 - C10 Fraction minus BTEX (F1) EP075(SIM)T: PAH Surrogates **EP074S: VOC Surrogates** ^ >C10 - C40 Fraction (sum) ^ C10 - C36 Fraction (sum) 4-Bromofluorobenzene 4-Bromofluorobenzene 1.2-Dichloroethane-D4 1.2-Dichloroethane-D4 2.4.6-Tribromophenol meta- & para-Xylene >C16 - C34 Fraction >C10 - C16 Fraction >C34 - C40 Fraction h Rt @de Gvx: WATER 2-Chlorophenol-D4 C15 - C28 Fraction C29 - C36 Fraction C6 - C10 Fraction 2-Fluorobiphenyl **EP080: BTEXN** 4-Terphenyl-d14 Anthracene-d10 Total Xylenes A Sum of BTEX Ethylbenzene ortho-Xylene Naphthalene Toluene-D8 Compound Phenol-d6 Benzene Toluene



f 83_LB40 f EM1104Fal 3 u∶mQu∶mC3 f ENJS/XNMEN, I rŒl V, H3nn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3k XVKh

Analytical Results

						0		
h Rt @de Qv: WATER		O	Client sample ID	GW12	GW13	GW14	GW15	GW16
	Cli	ent samp	Client sampling date / time	18億 V億011311600	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-006	EM1104286-007	EM1104286-008	EM1104286-009	EM1104286-010
EA005: pH								
pH Value		01801	- H3/2 m/C	6.91	6.25	6.67	6.11	7.20
EA015: Total Dissolved Solids								
	G\$\#10@10	⊢	n o/r	546	406	368	364	156
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	c MX @10 @01	_	n o/r	<1	<u>۲</u>	7>	\ \	<1
Carbonate Alkalinity as CaCO3	Ya1F@F@	-	n o/r	<1	۲۷	<1	۲۷	<1
Bicarbonate Alkalinity as CaCO3	j 1@F@	_	n o/r	149	27	82	26	57
Total Alkalinity as CaCO3		7	u o/r	149	27	82	26	57
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	, DA							
Sulfate as SO4 - Turbidimetric	14a0a@8@	7	n o/r	142	126	111	191	46
ED045G: Chloride Discrete analyser								
Chloride	11 aaj @ 0@	-	n o/r	80	75	55	7	13
ED093F: Dissolved Major Cations								
Calcium	j 440@0@	-	n o/r	2	4	23	12	9
Magnesium	j 4Y8@T@	-	n o/r	-	4	27	12	9
Sodium	j 440@Y@	-	n o/r	202	111	43	101	41
Potassium	j 440@8@	-	u o/r	4	10	22	13	7
EG020F: Dissolved Metals by ICP-MS								
Aluminium	j 4F8@0@	0801	n o/r	<0801	<01801	<0801	<01801	0.03
Arsenic	j 440@a@	0001	n o/r	0.008	0.003	0.005	<00001	0.001
Cadmium	j 440@Y@	0E0001	n o/r	<0B001	<0B001	<0B001	<08001	<0图001
Cobalt	j 440@a@	0001	n o/r	<08001	<0B01	0.004	0.008	<0B001
Copper	j 440@0@	08001	n o/r	0.005	0.002	0.001	0.002	<0B001
Lead	j 4Y8@F@	08001	n o/r	<0B01	0.008	<0801	0.001	<0 E 001
Manganese	j 4Y8@ @	0001	n o/r	<0B01	0.014	0.061	0.058	0.002
Nickel	j 440@F@	08001	u o/r	0.007	0.003	0.005	0.010	<0 B 001
Selenium	jjaF@8∰	0801	u o/r	<0801	<0.831	<0101	<01801	<0.801
Zinc	j 440@ @	OBOT	n o/r	<0B0T	0.018	0.007	0.016	0.045
Boron	j 440@F@	OBOT	n o/r	0.36	0.87	0.94	1.02	0.51
Iron	j 4Y8@8@	OE	n o/r	<0B)T	<0BJT	<0B0T	<0B)T	0.08
EG035F: Dissolved Mercury by FIMS								
Mercury	j 4Y8@j @	0E0001	n o/r	<0 B 0001	<0B001	<0B001	<08001	<0图001
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	1aT40@8@	0801	n o/r	<0图1	<0.831	<0801	<0圆1	<0801
EK025G: Free cyanide by Discrete Analyser								
Free Cyanide		0004	n o/r	<01804	<0B004	<00004	<00004	<05004
EK026G: Total Cyanide By Discrete Analyser								



f 103.1B40 f EM1104Fal 3 u∶mCu∶mC3 f ENJS/XNMEN, IrŒl V, H3nn ŒNn Eh f F100j 43 r2EV, 3 IVK33I h3d XVKh

Results	
Analytical	

h Ri @le ŷx: WATER		Clie	Client sample ID	GW12	GW13	GW14	GW15	GW16
	Cli	ent samplin	Client sampling date / time	18@ V@0113ITf00	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@0113Tf00
Compound	CAS Number	LOR	Unit	EM1104286-006	EM1104286-007	EM1104286-008	EM1104286-009	EM1104286-010
EK026G: Total Cyanide By Discrete Analyser -	- Continued							
Total Cyanide	Tj @F@	00004	n o/r	<01804	0.008	0.014	90.00	<06004
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser	iscrete Ana	lyser						
Weak Acid Dissociable Cyanide		00004	u o/r	<01804	<00004	<00004	<00004	<05004
EK040P: Fluoride by PC Titrator								
Fluoride	11 8a4@a@	0BI	u o/r	9.0	<0BI	<08	<0B	×0B
EK055G: Ammonia as N by Discrete Analyser								
	j I I 4@1@	0801	u o/r	<0图1	0.07	0.85	0.19	0.01
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N		0801	n o/r	<0图1	<01801	<0101	<0图1	<0831
EK058G: Nitrate as N by Discrete Analyser								
	14j 8j @T@	0801	u o/r	1.55	0.05	0.12	90:0	0.33
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser	screte Anal	yser						
Nitrite + Nitrate as N		0801	u o/r	1.55	0.05	0.12	90:0	0.33
EK071G: Reactive Phosphorus as P by discrete analyser	te analyser							
Reactive Phosphorus as P		0801	u o/r	<0801	<0130	<0801	<0801	<01801
EK085M: Sulfide as S2-								
Sulfide as S2-	1а481 @Т@	0BI	n o/r	<0BI	<0Bi	<0B	<0₿	⊠ 0>
EN055: Ionic Balance								
^ Total Anions		0801	n : q/r	8.19	5.27	5.51	4.50	2.49
^ Total Cations		0801	n : q/r	9.12	5.71	5.80	6.38	2.75
^ Ionic Balance		0801	%	5.34	3.92	2.50	17.2	5.04
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100@F@	⊢	ho/r		_>	⊢	>	⊢ ∨
Isopropylbenzene	8a@F@	_	ho/r	<⊤>				_≻
n-Propylbenzene	10Y@T@	_	ho/r	≺				L
1.3.5-Trimethylbenzene	10a@j	-	ho/r		₽	⊢ ≻	₽	₽
sec-Butylbenzene	1YT@a@	_	ho/r	<⊤>				_≻
1.2.4-Trimethylbenzene	8T@Y@	⊢	ho/r	≺	>		>	_≻
tert-Butylbenzene	8a@ @	⊢	ho/r	Τ>	>		>	L>
p-IsopropyItoluene	88	-	ho/r	Ļ	_>	T>		⊢ ∨
n-Butylbenzene	104@1@	⊢	ho/r	<⊤>	>		₽	₽
EP074B: Oxygenated Compounds								
Vinyl Acetate	10a@T@	T0	ho/r	<t0< th=""><th><t0< th=""><th>OL></th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th>OL></th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	OL>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
2-Butanone (MEK)	j a @ Y@	Т0	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
4-Methyl-2-pentanone (MIBK)	10a@0@	T0	ho/r	<t0< th=""><th><t0< th=""><th><70</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><70</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<70	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
2-Hexanone (MBK)	T81@a@	T0	ho/r	<t0< th=""><th><t0< th=""><th><70</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><70</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<70	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>



f 113_Db40 f EM1104Fal 3 u∶mOu∶mC3 f ENJS/XNMEN, I rŒI V, H3sn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3k XVKh eo: d Lyk3XyO.y n R mC yLz AC

Analytical Results

h Rt @deojx: WATER		Client sample ID	GW12	GW13	GW14	GW15	GW16
	Client :	Client sampling date / time	18億 V億01131开00	F0@ V@0113Tf00	F0@ V@01131Tf00	F0@ V@01131Tf00	F0@ V@0113Tf00
Compound	CAS Number	LOR	EM1104286-006	EM1104286-007	EM1104286-008	EM1104286-009	EM1104286-010
EP074C: Sulfonated Compounds							
Carbon disulfide) T@T@	T µo/r	₽	⊳	₽	∀	-
EP074D: Fumigants							
2.2-Dichloropropane	T84@0@	T µo/r			₽	_	-
1.2-Dichloropropane	j a @	T µo/r	₽	⊢	₽	⊢	⊢
cis-1.3-Dichloropropylene	1001 1@1@	T µo/r	∀	⊢	₽	₽	⊢ >
trans-1.3-Dichloropropylene	100l 1@F@	T µo/r	Υ.	₽	₽	₽	₩
1.2-Dibromoethane (EDB)	10I @ Y@	T µo/r	⊢		-	>	-
EP074E: Halogenated Aliphatic Compounds							
Dichlorodifluoromethane	j T@1@	T0 µo/r	<t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""></t0<></td></t0<>	<t0< td=""></t0<>
Chloromethane		T0 µo/r	<t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""></t0<></td></t0<>	<t0< td=""></t0<>
Vinyl chloride	@	T0 µo/r	<t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""></t0<></td></t0<>	<t0< td=""></t0<>
Bromomethane	j 4@Y@	T0 µo/r	<t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""></t0<></td></t0<>	<t0< td=""></t0<>
Chloroethane	T@000	T0 µo/r	<t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""></t0<></td></t0<>	<t0< td=""></t0<>
Trichlorofluoromethane		T0 µo/r	<t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""><td><t0< td=""></t0<></td></t0<></td></t0<>	<t0< td=""><td><t0< td=""></t0<></td></t0<>	<t0< td=""></t0<>
1.1-Dichloroethene		T µo/r	\	₽	₽	₽	⊢
Iodomethane		T µo/r	⊢	₽	₽	⊢	-
trans-1.2-Dichloroethene	1TI @0@	T µo/r	₽	⊢	₽	-	_>
1.1-Dichloroethane	j T@4@	T µo/r	∀	⊢	₽	⊢	
cis-1.2-Dichloroethene	1TI @8@	T µo/r	₽	₽	₽	₽	_>
1.1.1-Trichloroethane	j 1@T@	T µo/r	₽	⊢	₽	⊢	_>
1.1-Dichloropropylene	ш УФа®	T µo/r	₽	₽	₽	₽	_>
Carbon Tetrachloride	DAW IL	T µo/r	₽	⊢	₽	⊢	
1.2-Dichloroethane	10] @ @	T µo/r	₽	⊢	₽	⊢	_>
Trichloroethene	. 8 @ 18	T µo/r	∀	>	Τ>	T>	
Dibromomethane	j 4@T@	T µo/r	₽	⊢	₽	₽	⊢ ∨
1.1.2-Trichloroethane	j 8 6 00	T µo/r	₽	⊢	₽	⊢	_>
1.3-Dichloropropane	14F@a@	T µo/r	₽	₽	₽	₽	_>
Tetrachloroethene	1Fj @a@	T µo/r	₽	₽	₽	₽	⊢ ∨
1.1.1.2-Tetrachloroethane	1 Y0@0@	T µo/r		₽		₽	>
trans-1.4-Dichloro-2-butene	110@ @	T µo/r		₽	Τ>		
cis-1.4-Dichloro-2-butene	14j I @1@	T µo/r	₽	₽	₽	₽	⊢ ∨
1.1.2.2-Tetrachloroethane	j 8@4@	T µo/r	₽	⊢	₽	₽	_>
1.2.3-Trichloropropane	81 @ 8	T µo/r	₽	⊢	₽	⊢	⊢
Pentachloroethane		T µo/r	₽	₽	₽	₽	⊢ ∨
1.2-Dibromo-3-chloropropane	81 @F@	T µo/r		₽	۲≻	₽	>
Hexachlorobutadiene	aj @a@	T µo/r	>	₽	₽	₽	∀
EP074F: Halogenated Aromatic Compounds	spunod						
Chlorobenzene	10a@0億	T µo/r	₽		∀	⊢ ∨	



ENJS/XNMEN, I r⊞I V, H3nn ÆNn Eh F100j 43 r2EV, 3 I VK3GI h3d XVKh EM1104Fal 3 u:mQu:mGl d Lyk3XyO.y JLz AC n R mC

Analytical Results

FO@ V@01131T60 EM1104286-010 **GW16** × 18 × 18 × 18 × 8 × 18 × 18 × 18 × 18 × 18 × 18 ~0₩ < 1B Ŝ. ۲ کا Ļ. Ļ ₽ | **₩** Ļ FO@ V@0113Tf00 EM1104286-009 **GW15** ×18 × 8 ×18 × 8 × 8 × 8 <1B 0B ∨0B **₩** ∀ ∀ ∀ ∀ ∀ r V ∀ F0@ V@0113Tf00 EM1104286-008 **GW14** × 8 ^ ₩ × 18 ^ ₩ × 18 × 18 ^ 8 ^ 8 ^ 8 ^ 8 은 ~ <0B V V ∀ **₩** \vdash ∀ **∀ ∀** ∀ FO@ V@0113Tf00 EM1104286-007 GW13 ×18 4100 ×100 ×18 × 1B × 18 × 18 × 18 ×18 ×18 × 18 ×18 × 1B Å0B ×18 ×18 Ĉ V ₽ ₽ ₽ $\overline{\mathsf{v}}$ \vdash Ļ ∀ Ÿ ∀ 18@ V@0113Tf00 EM1104286-006 **GW12** ×18 × 18 <1B × 8 <1B <1B <1B <1B <1B <1B <1B <0BI × 8 **₩** \ V **₩** $\overline{\mathsf{v}}$ **₩** ∀ \vdash Client sample ID Client sampling date / time po/r po/r Unit ho/r po/r po/r ho/r ho/r ho/r ho/r ho/r ho/r LOR 8 8 8 8 8 8 8 8 6 6 8 8 8 8 6 6 6 6 8 8 10a@| @ 101 @Y@ 1F4@a@ 1F0@F@ FOI @4 FOT@8® F0j @a@ 8T@8@ 101 @ @ 8T@0@ 81600 al @Y@ aT@1@ TI @T@ TO@F@ 181646 1F0@F@ CAS Number T41@Y@ aj @ @ TOTA 1F8@0@ F1a@1@ 18Y@8@ EP074F: Halogenated Aromatic Compounds - Continued EP075(SIM)B: Polynuclear Aromatic Hydrocarbons EP080/071: Total Petroleum Hydrocarbons EP074G: Trihalomethanes A Sum of polycyclic aromatic **Bromodichloromethane** Dibromochloromethane 1.2.3-Trichlorobenzene 1.2.4-Trichlorobenzene Indeno(1.2.3.cd)pyrene Dibenz(a.h)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(g.h.i)perylene 1.2-Dichlorobenzene 1.3-Dichlorobenzene 1.4-Dichlorobenzene h Rt @legw: WATER Benz(a)anthracene hydrocarbons C10 - C14 Fraction C6 - C9 Fraction 4-Chlorotoluene **Acenaphthylene** 2-Chlorotoluene Benzo(a)pyrene **Bromobenzene** Acenaphthene **Phenanthrene** Fluoranthene Naphthalene Anthracene Chloroform Bromoform Compound Chrysene Fluorene

A Campbell Brothers Limited Compan

^T0

^T0

<100

<100

5 5 5

5 t

50

po/r po/r

^ C10 - C36 Fraction (sum)

C15 - C28 Fraction C29 - C36 Fraction



T 1Y1.0440 f EM1104Fal 3 u∶mOu∶mOl f ENJS/XNMEN, Ir至IV, H3nn SENnEh f F100j 43 r2EV, 3 IVK33Ih3X XVKh

d Lyk3xyO.y

n R mC

Analytical Results

FO@ V@01131T60 EM1104286-010 GW16 <F0 <100 <100 <100 <100 83.0 73.0 80.2 78.3 70.6 94.2 18.4 38.4 57.3 45.3 ^ A A L V Ϋ́ T T **₽ ₽ ₽** FO@ V@0113Tf00 EM1104286-009 **GW15** <F0</p>
< 100</p> **250** 83.9 105 97.4 84.3 89.2 92.1 32.4 65.2 92.1 78.4 80.3 107 250 ᄼᇚ Ϋ́ Å. **₩** Ϋ́ F0@ V@0113Tf00 EM1104286-008 **GW14** <100 <100 <100 <100 71.9 72.6 8.06 85.0 79.8 80.4 윤 123 108 ₩ 107 Å. Ϋ́ Å. Ϋ́ FO@ V@0113Tf00 EM1104286-007 GW13 <100 <100 <100 <100 98.9 97.9 90.6 55.6 64.8 85.5 83.4 117 96.3 V Å. ₩ Ϋ́ ₩ ₩. 18@ V@0113Tf00 EM1104286-006 **GW12** <100 <100 <100 <100 100 19.2 27.2 65.2 40.6 70.4 115 106 91.0 **₽** ₩ ₩ ₩ ₩ ₽ ₽ ₽ Client sample ID Client sampling date / time Unit po/r po/r po/r ho/r ho/r ho/r ho/r ho/r ho/r ho/r % % % ho/r ho/r ho/r ho/r % % % % % % % % % LOR EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft 100 9 1 9 1 요요 8 8 8 88 <u>B</u> 8 8 8 ட ш ш ш ш 100@1@ YF1@0@ 1j 0l 0@j @ F0Yj @j @ 8T@ @ 17Y0億0億 1j 0l 0@j 1Y1Fj @a@ 8Y8T1@Y@ 11a@8@ CAS Number j 1@9Y@€ 10a@a@ 10a@a@310l@F@ 81600 F0Yj 📵 @ 4 0000 1] 18@ 1j 1a@1@ 4 0000 EP075(SIM)S: Phenolic Compound Surrogates EP080S: TPH(V)/BTEX Surrogates C6 - C10 Fraction minus BTEX (F1) EP075(SIM)T: PAH Surrogates **EP074S: VOC Surrogates** ^ >C10 - C40 Fraction (sum) 4-Bromofluorobenzene 4-Bromofluorobenzene 1.2-Dichloroethane-D4 1.2-Dichloroethane-D4 2.4.6-Tribromophenol meta- & para-Xylene >C10 - C16 Fraction >C16 - C34 Fraction >C34 - C40 Fraction h Rt @legw: WATER 2-Chlorophenol-D4 C6 - C10 Fraction 2-Fluorobiphenyl **EP080: BTEXN** Anthracene-d10 4-Terphenyl-d14 ^ Total Xylenes A Sum of BTEX Ethylbenzene ortho-Xylene Naphthalene Toluene-D8 Toluene-D8 Compound Phenol-d6 Benzene Toluene



F0@ V@0113Tf00 EM1104286-015

360

 128

9

GW25

n R mC f ENJ S/XI JL z AC f F100j 43

d Lyk3xyO.y

f EM1104Fal 3 u:mひ:m臼 f ENJS/XNMEN, I r歪I V, Hstn stnn Eh f F100j 43 r 2 EV, 3 I V K3SI h弦 X V Kh

Analytical Results

FO@ V@0113Tf00 EM1104286-014 **GW24** <0B0001 0.001 0.004 0.002 0.019 0.012 0.013 0.039 <0個1 0.13 7.25 0.32 4430 ^\ \ \ \ 679 2340 38 67 21 42 FO@ V@01131Tf00 EM1104286-013 <0 ®001 <0B001 0.002 0.077 <0B001 0.037 0.041 0.033 <0B01 1.14 3.69 6.52 1280 326 326 388 38 39 8 œ FO@ V@0113Tf00 EM1104286-012 **GW22** <0B0001 0.003 0.003 900.0 0.045 0.053 0.008 0.041 <0B01 0.77 90.0 238 4 662 209 35 90 94 FO@ V@0113Tf00 EM1104286-011 **GW21** 0.079 0.004 0.010 0.082 0.017 <0周1 5.44 1590 2.19 1.64 53.8 981 39 4 74 277 82 24 38 Client sample ID Client sampling date / time - H3 mC u o/r n o/r u o/r u o/r n o/r u o/r u o/r Unit u o/r u o/r u o/r n o/r /o n LOR 0B001 0B001 00001 0B001 0B001 OBOOT 0891 0891 0B001 OBOT OBOT 089 4Y8@T@ j1@F@ G\$\#10@10 14a0a@8@ 11 aaj @0@ 440@8@ 440@a@ 440@a@ 4Y8@F@ 4Y8@ @ 440@F@ CAS Number c MX @10 @01 Ya1F@F@ 440@0@ 440@Y@ 440@Y@ 4400000 440@F@ jaF@8∰ 440@ 4Y8@8@ ED041G: Sulfate (Turbidimetric) as SO4 2- by DA EG020F: Dissolved Metals by ICP-MS EG035F: Dissolved Mercury by FIMS ED045G: Chloride Discrete analyser **ED093F: Dissolved Major Cations** ED037P: Alkalinity by PC Titrator **EA015: Total Dissolved Solids** ^ Total Dissolved Solids @180°C Bicarbonate Alkalinity as CaCO3 Hydroxide Alkalinity as CaCO3 Carbonate Alkalinity as CaCO3 Sulfate as SO4 - Turbidimetric Total Alkalinity as CaCO3 hRt @deGx: WATER EA005: pH Magnesium Manganese Aluminium Compound Potassium Cadmium Selenium pH Value Chloride Calcium Sodium Arsenic Copper Cobalt Nickel Boron Lead Zinc ro Lo

<0B0001

0.002

<0B0

132

8 5

<0B001

0.003

<0B001

0.014

0.003

<0B00T

1.00

<0B)

<0B00

<0B001

<0B001

<0B0001

<0B0001

u o/r

0E0001

j 4Y8@j @

<0周0>

A Campbell Brothers Limited Company

<0B004

0.010

<0B04

<0B04

<0B04

u o/r

00004

EK026G: Total Cyanide By Discrete Analyser

EK025G: Free cyanide by Discrete Analyser

Free Cyanide

EG050F: Dissolved Hexavalent Chromium

Mercury

Hexavalent Chromium

<0B0

^0 ₩

<0B01

<0B01

<0B0

u o/r

080

1aT40@8@



f 173_bb40 f EM1104Fal 3 u∶mOu∶m33 f ENJS/XNMEN, I rŒl V, H3nn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3k XVKh

Analytical Results

h Rt @degw: WATER		Clien	Client sample ID	GW21	GW22	GW23	GW24	GW25
	Clier	it sampling	Client sampling date / time	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@0113Tf00
Compound	CAS Number	LOR	Unit	EM1104286-011	EM1104286-012	EM1104286-013	EM1104286-014	EM1104286-015
EK026G: Total Cyanide By Discrete Analyser - Continued	- Continued							
Total Cyanide		00004	n o/r	0.020	0.165	0.086	0.219	0.008
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser	Discrete Anal	yser						
Weak Acid Dissociable Cyanide		0B004	u o/r	<08004	9000	900.0	0.021	<00004
EK040P: Fluoride by PC Titrator								
Fluoride	11 8a4@a@	0BI	u o/r	0.4	9.0	0.1	0.3	<0B
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	j I I 4@1@	0801	n o/r	26.8	0.99	201	854	2.11
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N		0801	u o/r	<01801	0.14	0.05	0.02	<01301
EK058G: Nitrate as N by Discrete Analyser								
^ Nitrate as N	14j 8j @T@	0801	n o/r	0.10	0.79	0.48	5.35	0.24
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser	iscrete Analy	ser						
Nitrite + Nitrate as N		0801	u o/r	0.10	0.93	0.54	5.37	0.24
EK071G: Reactive Phosphorus as P by discrete analyser	ete analyser							
Reactive Phosphorus as P		0801	u o/r	<0图1	<0.001	<0801	<0801	<0图1
EK085M: Sulfide as S2-								
Sulfide as S2-	1а481 ФТ	OBI	n o/r	<0Bl	<0 B i	<0B	<0B	<0Bl
EN055: Ionic Balance								
^ Total Anions		0801	n : q/r	23.3	11.6	15.7	63.5	6.72
^ Total Cations		01801	n : d/r	22.6	12.7			7.32
Total Cations		0801	n : q/r			14.3	56.8	
^ Ionic Balance		0801	%	1.47	4.43			4.25
Ionic Balance		0801	%			5.54	5.59	
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100@F@	_	ho/r	>	Ļ	_>	193	_>
Isopropylbenzene	8a@F@	_	ho/r	L>	₽	>	<100	_>
n-Propylbenzene	10Y@T@	_	ho/r	>	≺	Τ>	<100	
1.3.5-Trimethylbenzene	10a@j @	_	ho/r	>	⊢	>	<100	_>
sec-Butylbenzene	1YT@a@	_	ho/r	>	حل	>	<100	>
1.2.4-Trimethylbenzene	8T@Y@	_	ho/r		≺	Τ>	185	
tert-Butylbenzene	8a@ @	_	ho/r	>	⊢	>	<100	_>
p-IsopropyItoluene	88@ @	_	ho/r	>	۲	>	<100	>
n-Butylbenzene	104@1@	⊢	ho/r	₽	₽	₽	<100	⊢
EP074B: Oxygenated Compounds								
Vinyl Acetate	10a@T@	T0	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<>	<1000	<t0< th=""></t0<>
2-Butanone (MEK)	j a @ Y@	T0	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><1000</th><th><70</th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><1000</th><th><70</th></t0<></th></t0<>	<t0< th=""><th><1000</th><th><70</th></t0<>	<1000	<70



f 11 3_1540 f EM1104Fal 3 u∶mQu∶mଔ f ENJS/XNMEN, I rŒl V, H3nn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3k XVKh

eo: d Lyk3XyO.y n R mC

yLz AC

Analytical Results

•								
h Rt @de⊙x: WATER		Clie	Client sample ID	GW21	GW22	GW23	GW24	GW25
	Clie	ıt samplir	Client sampling date / time	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@01131f00	F0@ V@0113Tf00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-011	EM1104286-012	EM1104286-013	EM1104286-014	EM1104286-015
EP074B: Oxygenated Compounds - Continued	pe							
4-Methyl-2-pentanone (MIBK)	10a@0@	T0	ho/r	<t0< th=""><th><t0< th=""><th>OT></th><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th>OT></th><th><1000</th><th><t0< th=""></t0<></th></t0<>	OT>	<1000	<t0< th=""></t0<>
2-Hexanone (MBK)	Т81@а@	Т0	ho/r	<70	<t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<>	<1000	<t0< th=""></t0<>
EP074C: Sulfonated Compounds								
Carbon disulfide	j T@T@	Τ	ho/r	<⊤	_≻		<100	⊢ ∨
EP074D: Fumigants								
2.2-Dichloropropane	T84億0@	T	ho/r	<⊤>			<100	>
1.2-Dichloropropane	j a @ @	⊢	ho/r	<⊤	ح⊥	- ✓	<100	>
cis-1.3-Dichloropropylene	1001 1@1@	⊢	ho/r		⊢		<100	
trans-1.3-Dichloropropylene	100l 1@F@	_	ho/r		∀		<100	_
1.2-Dibromoethane (EDB)	10I @Y@	⊥	ho/r	<⊤>	۲	>	<100	₽
EP074E: Halogenated Aliphatic Compounds	S							
Dichlorodifluoromethane	j T@1@	T0	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<>	<1000	<t0< th=""></t0<>
Chloromethane	j 4 @ @	10	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<>	<1000	<t0< th=""></t0<>
Vinyl chloride	j T@1	으	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<>	<1000	<t0< th=""></t0<>
Bromomethane	j 4@Y@	으	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<>	<1000	<t0< th=""></t0<>
Chloroethane	j T 6 00	으	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<>	<1000	<t0< th=""></t0<>
Trichlorofluoromethane	j T@8@	10	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><1000</th><th><t0< th=""></t0<></th></t0<>	<1000	<t0< th=""></t0<>
1.1-Dichloroethene	j T@T@	⊢	ho/r		⊢		<100	
lodomethane	j 4 @a@	⊥	ho/r	≺T			<100	
trans-1.2-Dichloroethene	1TI @0@	⊢	ho/r	<⊤	ح⊥	- ✓	<100	>
1.1-Dichloroethane	ј Т ® 4®	⊢	ho/r		>	۲>	<100	L>
cis-1.2-Dichloroethene	1TI @8@	⊥	ho/r	≺T			<100	
1.1.1-Trichloroethane	j 1@T@	⊢	ho/r	۲>	L≻	>	<100	>
1.1-Dichloropropylene	П УФаФ	⊢	ho/r	≺	حل	Τ>	<100	>
Carbon Tetrachloride	TI @Y@	⊢	ho/r	≺T		Τ>	<100	>
1.2-Dichloroethane	10j @ @	_	ho/r	<⊤>		Τ>	<100	
Trichloroethene	j 8 @ 1@	⊢	ho/r	≺	∀	>	<100	
Dibromomethane	j 4 ® T@	⊢	ho/r	-Τ>		Τ>	<100	>
1.1.2-Trichloroethane) 8 @ 0@	⊢	ho/r	۲	L≻	>	<100	>
1.3-Dichloropropane	14F@a@	⊢	ho/r	≺	L∨	Τ>	<100	>
Tetrachloroethene	1Fj @a@	_	ho/r	₽	⊢	L>	<100	⊢ ∨
1.1.1.2-Tetrachloroethane	1 YO@O@	⊢	ho/r	۲	L∨	>	<100	
trans-1.4-Dichloro-2-butene	11000 @	⊢	ho/r	≺	↓	>	<100	
cis-1.4-Dichloro-2-butene	14j @1@	⊢	ho/r	-Τ>		Τ>	<100	>
1.1.2.2-Tetrachloroethane	j 8 @ 4@	_	ho/r		∀		<100	_
1.2.3-Trichloropropane	81 @a@	_	ho/r		<t></t>	>	<100	>
Pentachloroethane) @	⊢	ho/r		₽	>	<100	_
1.2-Dibromo-3-chloropropane	81 @F@	_	ho/r	<	<⊤	<	<100	<⊤>



f 1j 3_Lb40 f EM1104Fal 3 u∶m2u∶m33 f ENJS/XNMEN, I rŒl V, H3sn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3k XVKh

Analytical Results

h Rt @ye ŷκ: WATER		Clier	Client sample ID	GW21	GW22	GW23	GW24	GW25
	Clie	nt samplin	Client sampling date / time	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@01131Tf00	F0@ V@01131Tf00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-011	EM1104286-012	EM1104286-013	EM1104286-014	EM1104286-015
EP074E: Halogenated Aliphatic Compounds - Continued	Continued							
Hexachlorobutadiene	aj @a@	⊥	ho/r	<⊤			<100	
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	10a@0@	⊢	ho/r		>	>	<100	>
Bromobenzene	10a@ @	-	ho/r	⊢ ≻	⊢	₽	<100	
2-Chlorotoluene	8T@8@	-	ho/r	_≻	⊢	L	<100	
4-Chlorotoluene	101 @Y@	-	ho/r	-		⊢	<100	>
1.3-Dichlorobenzene	T41@Y@	—	ho/r	_	⊢	⊢	<100	>
1.4-Dichlorobenzene	101 @	-	ho/r	⊢	⊢	⊢	<100	
1.2-Dichlorobenzene	8T@0@	_	ho/r	>	>		<100	>
1.2.4-Trichlorobenzene	1F0@F@	-	ho/r	_	_	-	<100	>
1.2.3-Trichlorobenzene	aj @1@	-	ho/r	_≻	⊢	⊢	<100	
EP074G: Trihalomethanes								
Chloroform	- 	-	ho/r	>			<100	>
Bromodichloromethane) T	-	ho/r	Ļ	L	L	<100	
Dibromochloromethane	1F4@a@	-	ho/r		>		<100	>
Bromoform	j T@T@	—	ho/r	_>	⊢	L	<100	T≻
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	pons							
Naphthalene	8166000	18	ho/r	<180	<180	1.2	1820	<18
Acenaphthylene	F0a@ @	189	ho/r	<1B	<180	×18	58.1	<18
Acenaphthene	aY@F@	189	ho/r	<18	<180	2.4	<10B)	<18
Fluorene	al @Y@	9	ho/r	<1B	<180	× 18	20.2	<18
Phenanthrene	aT@1@	180	ho/r	<18	<180	<188	<10B)	<18
Anthracene	1F0@F@	180	ho/r	<18	<180	<188	<10B)	<18
Fluoranthene	FOI @4@	189	ho/r	<18	<180	<188	<10B)	<18
Pyrene	1F8@0@	189	ho/r	<18	<180	<18	<1050	<18
Benz(a)anthracene	TI @T@	189	ho/r	<18	<180	<188	<10B)	<18
Chrysene	F1a@1@	180	ho/r	<18	<180	<188	<10B)	<18
Benzo(b)fluoranthene	F0T@8@	180	ho/r	<18	<180	<18	<10B0	<18
Benzo(k)fluoranthene	F0j @a@	180	ho/r	<18	<180	<18	<10E	<18
Benzo(a)pyrene	T0@F@	081	ho/r	<0B	<0B	<0B	<tb< th=""><th><0B</th></tb<>	<0B
Indeno(1.2.3.cd)pyrene	1870800	180	ho/r	<18	<180	<150	<10B)	<18
Dibenz(a.h)anthracene	TY@0@	189	ho/r	<18	<180	<188	<10B)	<18
Benzo(g.h.i)perylene	18164	1180	ho/r	<18	<180	<150	<10B)	<18
^ Sum of polycyclic aromatic		08	ho/r	~1 ∏	<1 F	3.6	1900	<1₩
hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		6	ho/r	<f0< th=""><th><f0< th=""><th>70</th><th>9780</th><th><f0< th=""></f0<></th></f0<></th></f0<>	<f0< th=""><th>70</th><th>9780</th><th><f0< th=""></f0<></th></f0<>	70	9780	<f0< th=""></f0<>
C10 - C14 Fraction		10	ho/r	<t0< th=""><th><t0< th=""><th>380</th><th>14200</th><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th>380</th><th>14200</th><th><t0< th=""></t0<></th></t0<>	380	14200	<t0< th=""></t0<>



f 1a3.1b40 f EM1104Fal 3 u∶mCu∶mC3 f ENJS/XNMEN, IrŒl V, H3nn ŒNn Eh f F100j 43 r2EV, 3 IVK33l h3t XVKh

eo: d Lyk3XyO.y n R mC

yLz AC

Analytical Results

			-					
h Ri @le gvx: WATER		Clie	Client sample ID	GW21	GW22	GW23	GW24	GW25
	Clie	ent samplii	Client sampling date / time	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@01131Tf00	F0@ V@0113Tf00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-011	EM1104286-012	EM1104286-013	EM1104286-014	EM1104286-015
EP080/071: Total Petroleum Hydrocarbons - Continued	s - Continued							
C15 - C28 Fraction		100	ho/r	<100	<100	1250	6120	120
C29 - C36 Fraction		D_	ho/r	<t0< td=""><td><t0< td=""><td>170</td><td>220</td><td>20</td></t0<></td></t0<>	<t0< td=""><td>170</td><td>220</td><td>20</td></t0<>	170	220	20
^ C10 - C36 Fraction (sum)		D_	ho/r	<t0< th=""><th><t0< th=""><th>1800</th><th>20500</th><th>190</th></t0<></th></t0<>	<t0< th=""><th>1800</th><th>20500</th><th>190</th></t0<>	1800	20500	190
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft	ons - NEPM 2010) Draft						
C6 - C10 Fraction		9	ho/r	<f0< td=""><td><f0< td=""><td>120</td><td>9720</td><td><f0< td=""></f0<></td></f0<></td></f0<>	<f0< td=""><td>120</td><td>9720</td><td><f0< td=""></f0<></td></f0<>	120	9720	<f0< td=""></f0<>
^ C6 - C10 Fraction minus BTEX (F1)		9	ho/r	<f0< td=""><td><f0< td=""><td>06</td><td><f000< td=""><td><f0< td=""></f0<></td></f000<></td></f0<></td></f0<>	<f0< td=""><td>06</td><td><f000< td=""><td><f0< td=""></f0<></td></f000<></td></f0<>	06	<f000< td=""><td><f0< td=""></f0<></td></f000<>	<f0< td=""></f0<>
>C10 - C16 Fraction		100	ho/r	<100	<100	550	14600	<100
>C16 - C34 Fraction		100	ho/r	<100	<100	1160	4670	160
>C34 - C40 Fraction		100	ho/r	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)		100	ho/r	<100	<100	1710	19300	160
EP080: BTEXN								
Benzene	j 1@Y@	-	ho/r	₹	₹	16	6350	>
Toluene	10a@a@	ш	ho/r	₩	٩×	₩	318	Υ.
Ethylbenzene	100@1@	ш	ho/r	₩	Ą	13	111	₩.
meta- & para-Xylene 10.	10a@a@310l @F@	ш	ho/r	Ψ.	Ψ.	Υ.	1550	Υ.
ortho-Xylene	8T@ @	ш	ho/r	4	٩×	က	739	4
^ Total Xylenes	17Y0億0億	ш	ho/r	₩	٩×	က	2290	Υ.
^ Sum of BTEX		-	ho/r	>	₹	32	0406	>
Naphthalene	81600	⊥	ho/r	<⊤>	_>	_>	4530	9
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	1j 0l 0 @ ; @	08	%	95.5	110	95.4	101	9.96
Toluene-D8	F0Y] @ @	08	%	206	110	101	106	94.9
4-Bromofluorobenzene	41 00000	08	%	81.2	101	96.8	9.66	83.2
EP075(SIM)S: Phenolic Compound Surrogates	gates							
Phenol-d6	1Y1Fj @a@	08	%	30.1	24.1	24.2	49.0	37.2
2-Chlorophenol-D4	8Y8T1@Y@	08	%	60.5	48.6	52.3	92.4	74.6
2.4.6-Tribromophenol	11a@8@	08	%	75.6	81.2	116	116	86.5
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	YF1@0@	08	%	9.99	62.0	68.3	105	79.6
Anthracene-d10	1j 18@ @	08	%	77.2	83.5	93.1	121	89.8
4-Terphenyl-d14	1j 1a@1@	08	%	88.1	92.2	107	127	101
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	1j 0l 0 @ j @	0Bi	%	113	130	7.76	118	112
Toluene-D8	F0Yj @ @	08	%	95.7	116	98.0	111	100
4-Bromofluorobenzene	41 00000	08	%	83.4	101	91.6	9.66	83.3



eo: f 183.b d Lyk3xyo.y f EM11 n R n C f ENJ 9 yLz AC f F100j

Analytical Results

h Rt @deýw: WATER		C	Client sample ID	GW27	GW36	GW39	GW40	GW41
	Cli	ent sampl	Client sampling date / time	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-016	EM1104286-017	EM1104286-018	EM1104286-019	EM1104286-020
EA005: pH								
pH Value		0.001	- H3 mC	7.30	7.08	6.52	7.10	7.15
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	G\$\@10@10	⊥	u o/r	3610	3400	3110	1040	1260
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	c MX @10@01	-	u o/r		>	7	₹	\
Carbonate Alkalinity as CaCO3	Ya1F@F@	_	u o/r		₹	₹	₹	^
Bicarbonate Alkalinity as CaCO3	j 1@F@	-	u o/r	506	800	215	167	224
Total Alkalinity as CaCO3		~	u o/r	506	800	215	167	224
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	DA							
Sulfate as SO4 - Turbidimetric	14a0a@8@	-	u o/r	711	440	2250	28	226
ED045G: Chloride Discrete analyser								
Chloride	11 aaj @0@	-	u o/r	1100	1320	57	385	298
ED093F: Dissolved Major Cations								
Calcium	j 440@0@	-	u o/r	73	93	280	128	147
Magnesium	j 4Y8@T@	-	u o/r	75	113	81	42	99
Sodium	j 440@Y@	~	u o/r	941	931	89	25	48
Potassium	j 440@8@	_	u o/r	10	35	17	27	24
EG020F: Dissolved Metals by ICP-MS								
Aluminium	j 4F8@0@	0801	u o/r	<01801	<01301	<0801	<0801	<01801
Arsenic	j 440@a@	0001	u o/r	0.003	0.025	0.011	0.007	0.014
Cadmium	j 440@Y@	0E0001	u o/r	<000001	<050001	<0B001	<00001	<050001
Cobalt	j 440@a@	0001	u o/r	0.003	0.002	0.040	<0B001	0.001
Copper	j 440@0@	0001	u o/r	0.004	0.004	0.001	0.001	0.001
Lead	j 4Y8 ® F@	0001	u o/r	<05001	<08001	<08001	<05001	0.001
Manganese	j 4Y8 ® @	0001	u o/r	0.231	0.241	5.50	0.124	0.132
Nickel	j 440@F@	0001	u o/r	0.023	0.005	0.029	0.005	<05001
Selenium	j j aF@8∰	0801	u o/r	<0.801	<01801	<0801	<0801	<0801
Zinc	j 440@ @	OBOT	u o/r	0.019	0.009	0.012	<0B00T	<0 B 00T
Boron	j 440@F@	OBOT	u o/r	0.65	1.30	1.57	0.34	0.67
Iron	j 4Y8@8@	OBOT	u o/r	<0B)T	<0图)	29.5	<0B)T	<0B)T
EG035F: Dissolved Mercury by FIMS								
Mercury	j 4Y8@j @	0E0001	u o/r	0.0004	0.0002	<0B001	0.0002	0.0002
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	1aT40@8@	0801	u o/r	<01801	<0图1	<0B01	<0801	<0801
EK025G: Free cyanide by Discrete Analyser								
Free Cyanide		0 B 004	u o/r	<01804	<0圈04	9000	<05004	<0E004
EK026G: Total Cyanide By Discrete Analyser								



Analytical Results

FO@ V@01131T60 EM1104286-020 **GW41** <0B004 6.30 0.027 15.5 <0B01 0.09 0.09 는 단 V 4. 0.31 ₽ **⊢ ⊢** F V **⊢ ⊢** | FO@ V@0113Tf00 EM1104286-019 GW40 0.010 <0B004 14.8 9.60 8.90 0.0 0.28 0.30) MOV <0B 5 5 5 1.0 **∀ ∀ ▽ ▽ ▽ ∀** $\overline{\mathsf{v}}$ FO@ V@01131Tf00 EM1104286-018 0.093 0.009 48.0 <0B01 4.68 한 안 안 1.0 430 0.5599.0 1.21 ~0B V V **∀ ∀ ∀** Ÿ ∀ FO@ V@0113Tf00 EM1104286-017 **GW36** <0B04 0.053 5.94 5 5 5 0.08 2.84 <0B0 ^0B 1.9 \ \ \ \ V \ V ∀ $\overline{\mathsf{v}}$ V FO@ V@0113Tf00 EM1104286-016 <0B004 **GW27** 0.004 4.65 10.2 10.3 0.04 Ĉ Ĉ 1.0 0.60 0.03 0<u>B</u> **▽ ▽ ▽ ₩**
 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 □

 </tb>
 Client sample ID Client sampling date / time u : q/r u : q/r n : q/r u o/r u o/r n o/r u o/r u o/r u o/r Unit u o/r u o/r u o/r ho/r ho/r ho/r po/r po/r po/r po/r ho/r ho/r % % 0B004 LOR 0B004 0801 0891 0891 0891 OB 0801 089 089 1 0 68 1 0 68 1 08 2 1 EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser 14j 8j @T@ 1YT@a@ 88 EK071G: Reactive Phosphorus as P by discrete analyser 1a48l@T@ 8T@Y@ 8a@| @ 104@1@ 10a@T@ ja@oy@ Tj @F@ 11 8a4@a@ 11 4@1@ CAS Number EK026G: Total Cyanide By Discrete Analyser - Continued 10Y@T@ 10a@j EK055G: Ammonia as N by Discrete Analyse EP074A: Monocyclic Aromatic Hydrocarbons EK058G: Nitrate as N by Discrete Analyser EK057G: Nitrite as N by Discrete Analyser EP074B: Oxygenated Compounds EK040P: Fluoride by PC Titrator Weak Acid Dissociable Cyanide Reactive Phosphorus as P EK085M: Sulfide as S2-EN055: Ionic Balance 1.3.5-Trimethylbenzene 1.2.4-Trimethylbenzene Nitrite + Nitrate as N p-Isopropyltoluene hRt @deGx: WATER sec-Butylbenzene 2-Butanone (MEK) Isopropylbenzene tert-Butylbenzene n-Propylbenzene n-Butylbenzene ^ Total Cations ^ lonic Balance Ammonia as N ^ Total Anions Nitrate as N Total Cyanide Sulfide as S2-**Total Cations lonic Balance** Vinyl Acetate Nitrite as N Compound Fluoride Styrene



FO@ V@01131T60 EM1104286-020

은 안 안

 $\frac{1}{\sqrt{2}}$ Ļ ۱ ۲ F V Ļ.

GW41

d Lyk3XyO.y JLz AC n R mC

ENJ S/X NMEN, I r ŒI V, H3hn ÆNn Eh F100j 43 r2EV, 3 I VK3GI h3d XVKh EM1104Fal 3 u:mQu:mGl

Analytical Results

FO@ V@0113Tf00 EM1104286-019 GW40 € £ \$ \$ \$ \$ \$ \$ ₽ ₩ $\frac{1}{\sqrt{2}}$ $\overline{\nabla}$ ∀ $\overline{}$ \ V ∀ ∀ Ÿ \ V ∀ ∀ **∀** \vdash F0@ V@0113Tf00 EM1104286-018 GW39 € £ ₽ ₽ ₽ 5 ₽ \ $\frac{1}{\sqrt{2}}$ $\overline{\nabla}$ ∀ Ÿ Ÿ ∀ \vdash **∀ ∀** FO@ V@0113Tf00 EM1104286-017 **GW36** 5To \$ \$ \$ \$ \$ \$ \ V \ V ₽ ₽ ∀ $\overline{\nabla}$ ₽ ∀ ∀ $\overline{}$ \ V ∀ $\overline{\nabla}$ V ∀ ∀ \vdash V ∀ FO@ V@0113Tf00 EM1104286-016 **GW27** ^70 75 6 6 6 6 6 6 £ £ 우 ∀ \ \ ₽ ₩ **∀ ∀** \ **▽ ▽ ▽ ₩** ₩ ₩ ₩ ∀ Client sample ID Client sampling date / time ho/r ho/r Unit ho/r ho/r ho/r ho/r po/r po/r po/r po/r ho/r po/r po/r po/r ho/r LOR 유 유 2222 2 10a@0@ T84@0@ 1TI @0@ П УФаФ 10j 🔞 🛞 j 8**@**1@) 8**6**00 T@T@ j a (a) T@1@ 400 T@1@ 4@Y@ T@8@ TOOTO T@4@ j 1@T@ TI @Y@ 4@T@ 10I @Y@ CAS Number T81@a@ 1001 1@1@ 1001 1@F@ j 4@a@ 1TI @8@ 14F@a@ EP074B: Oxygenated Compounds - Continued EP074E: Halogenated Aliphatic Compounds **EP074C: Sulfonated Compounds** 4-Methyl-2-pentanone (MIBK) trans-1.3-Dichloropropylene cis-1.3-Dichloropropylene 1.2-Dibromoethane (EDB) Dichlorodifluoromethane trans-1.2-Dichloroethene Trichlorofluoromethane cis-1.2-Dichloroethene **EP074D: Fumigants** 1.1-Dichloropropylene 1.1.1-Trichloroethane Carbon Tetrachloride 1.1.2-Trichloroethane 2.2-Dichloropropane 1.2-Dichloropropane 1.3-Dichloropropane 1.1-Dichloroethene 1.1-Dichloroethane 1.2-Dichloroethane h Rt @legw: WATER 2-Hexanone (MBK) Dibromomethane Carbon disulfide Trichloroethene Chloromethane **Bromomethane** Chloroethane Vinyl chloride lodomethane Compound

5 5 5 5 5 5

⊢ ⊢ Ļ F V ۱- **⊢ ⊢**

<u>~</u>

⊢ Ļ Ļ Ļ Ļ $\frac{1}{\sqrt{2}}$ Ļ Ļ $\frac{1}{\sqrt{2}}$ Ļ Ļ \vdash

> ∀ ∀ \vdash \vdash ∀

 \vdash ∀

∀ ∀

ho/r

1Fj@a@

| YO@O@ 1100000 4j | @1@

trans-1.4-Dichloro-2-butene

1.1.2.2-Tetrachloroethane

1.2.3-Trichloropropane

Pentachloroethane

cis-1.4-Dichloro-2-butene

1.1.1.2-Tetrachloroethane

Tetrachloroethene

ho/r ho/r

\ V **₩**

ho/r

ho/r

81 @a@

j **9** 81 @F@

1.2-Dibromo-3-chloropropane

8@4@

ho/r

 \vdash

∀

∀ \vdash \vdash

Ļ $\overline{}$ $\frac{1}{\sqrt{2}}$ Ļ $\frac{1}{\sqrt{2}}$

 \vdash



d Lyk3X,O.y f EM1104 n R nC f ENJ S/X yLz AC f F100j 45

f EM1104Fal 3 u∶mOu∶mOd f ENJS/XNMEN, IrÆl V, H3nn ŒNnEh f F100] 43 r2EV, 3 IVK3GI h3l XVKh

Analytical Results

FO@ V@01131T60 EM1104286-020 **GW41** × 18 × 18 4.5 1.5 8.5 3.5 4.9 د. 3.6 ×18 \vdash F V Ļ. | **∀ ∀ ⊢** ⊢ v <u>_</u> $\frac{1}{\sqrt{2}}$ ₽ ⊢ V Ļ 4.7 2.2 2.1 FO@ V@0113Tf00 EM1104286-019 GW40 2.6 ^18 1.2 1.2 6.0 1.6 2.8 $\overline{}$ \vdash ∀ ∀ ∀ \vdash **∀ ∀** ∀ F0@ V@0113Tf00 EM1104286-018 GW39 × 18 × 8 ^ 8 ^ 8 ^ 8 ^ ₩ ^ 8 <0B <18 4.1 ∀ $\overline{}$ **∀** ∀ Ÿ \vdash **∀ ∀** FO@ V@0113Tf00 EM1104286-017 **GW36** × 18 ×18 ×18 <1B ×18 ^ <u>^ 6</u> × 18 × 18 × 18 <1B ^ 8 <1B 80 ₽ ∀ Ļ ₽ ∀ V V $\overline{\mathsf{v}}$ Ÿ $\overline{}$ V Ÿ ∀ FO@ V@0113Tf00 EM1104286-016 **GW27** <1B <1B <1B <1B <1B <1B × 18 <1B × 18 <1B × 18 × 18 <0**B** $\overline{\nabla}$ **₩ ₩** \ ₩ ₽ $\overline{\nabla}$ **∀ ∀** ₩ \vdash Client sample ID Client sampling date / time ho/r po/r po/r po/r ho/r ho/r ho/r po/r po/r po/r po/r ho/r Cnit ho/r LOR 8 8 8
 6
 6
 6
 6
 6

 6
 6
 6
 6
 6
 6
 8 8 8 8 8 B B 8 8 9 10a@0@ 101 @Y@ 101 @ @ 1F0@F@ FOI @4@ F1a@1@ F0j @a@ 8T@8@ T41@Y@ al @Y@ TI @T@ T0@F@ aj @1@ **8** (B) j Tætæ aY@**F@** aT@1@ 18Y@8@ TYEOG F0a@ @ CAS Number aj @a@ 10a@ @ 8T@0@ 1F4@a@ 1F0@F@ 1F8@0@ F0T@8@ 18164 EP074E: Halogenated Aliphatic Compounds - Continued EP075(SIM)B: Polynuclear Aromatic Hydrocarbons EP074F: Halogenated Aromatic Compounds EP080/071: Total Petroleum Hydrocarbons EP074G: Trihalomethanes ^ Sum of polycyclic aromatic **Bromodichloromethane** Dibromochloromethane 1.2.3-Trichlorobenzene 1.2.4-Trichlorobenzene Indeno(1.2.3.cd)pyrene Dibenz(a.h)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Hexachlorobutadiene Benzo(g.h.i)perylene 1.3-Dichlorobenzene 1.4-Dichlorobenzene 1.2-Dichlorobenzene h Rt @de Gvx: WATER Benz(a) anthracene hydrocarbons 2-Chlorotoluene 4-Chlorotoluene Acenaphthylene Benzo(a)pyrene Bromobenzene Chlorobenzene Acenaphthene Phenanthrene Fluoranthene Naphthalene Anthracene Chloroform Bromoform Compound Chrysene Fluorene

A Campbell Brothers Limited Compan

۸F0

운 수

440

9

0 5 0 5

5

ho/r

요

C10 - C14 Fraction

C6 - C9 Fraction

Ŝ.



| FTALGAO | EM1104Fal 3 u:mQu:m3d | ENJSYXNMEN, Ir至IV, H3m6EP

d Lyk3xyO.y

n R mC

f ENJS/XNMEN, I r∄I V, H3nn ŒNn Eh f F100j 43 r2EV, 3 I VK33I h3t XVKh

Analytical Results

FO@ V@01131T60 EM1104286-020 **GW41** <100 **220** <100 29.5 58.7 83.0 94.3 81.2 150 110 260 89.1 79.8 85.1 22 V T V T V L V T T T V ۲ V Ļ 89.7 102 105 FO@ V@0113Tf00 EM1104286-019 GW40 <100 **120**<100 87.6 100 87.6 99.0 87.9 70.5 Å. Å. 120 98.6 34.1 114 105 2 2 ᄼᇚ Ϋ́ ₩ 4 Å. Ÿ ∀ FO@ V@01131Tf00 EM1104286-018 GW39 1390 <100 49.3 86.9 82.0 74.6 2170 79.3 140 85.1 11.6 94.6 80.5 069 2080 79.3 106 9 28 42 8 4 8 4 œ FO@ V@0113Tf00 EM1104286-017 **GW36** ×100 <100 <100 <100 5 5 5 92.0 84.8 33.2 72.7 98.5 89.3 88.7 88.5 Ϋ́ 쑤 109 **₽** ₩ ү \ Г Ÿ ∀ FO@ V@0113Tf00 EM1104286-016 **GW27** <100 280 190 470 79.7 71.4 15.7 42.6 57.3 67.4 79.4 84.1 70.2 € € 380 100 480 **₽ ₽ ₽** ∀ Client sample ID Client sampling date / time Unit ho/r ho/r po/r po/r po/r ho/r ho/r ho/r ho/r ho/r ho/r ho/r ho/r ho/r % % % % % % % % % % % % LOR EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft 5 5 5 8 8 8 요 요 8 8 8 8 8 8 ш ш ш ш ш YF1@0@ 1j 0l 0@j @ F0Yj @j @ j 1@PY∰ 8T@ @ 81600 10a@a@310l@F@ 1Y1Fj @a@ 8Y8T1@Y@ CAS Number 10a**യു**a@ 100@1@ 17Y0億0億 1] 01 0@ @ FOYj 📵 @ 4 00000 11a@8@ 1j 18@| @ 1j 1a@1@ 410000 EP080/071: Total Petroleum Hydrocarbons - Continued EP075(SIM)S: Phenolic Compound Surrogates EP080S: TPH(V)/BTEX Surrogates ^ C6 - C10 Fraction minus BTEX (F1) EP075(SIM)T: PAH Surrogates **EP074S: VOC Surrogates** ^ >C10 - C40 Fraction (sum) ^ C10 - C36 Fraction (sum) 4-Bromofluorobenzene 4-Bromofluorobenzene 1.2-Dichloroethane-D4 1.2-Dichloroethane-D4 2.4.6-Tribromophenol meta- & para-Xylene >C10 - C16 Fraction >C16 - C34 Fraction >C34 - C40 Fraction hRt @deGx: WATER 2-Chlorophenol-D4 C15 - C28 Fraction C29 - C36 Fraction C6 - C10 Fraction 2-Fluorobiphenyl **EP080: BTEXN** 4-Terphenyl-d14 Anthracene-d10 Total Xylenes A Sum of BTEX Ethylbenzene ortho-Xylene Naphthalene Toluene-D8 Compound Phenol-d6 Benzene Toluene



y_z AC f F100j

eo: d Lyk3XyQ.y n R mC

f F43.bb40 f EM1104Fal 3 u∶mOu∶m©l f ENJS/XNMEN, I rŒl V, H3n ŒNn Eh f F100j 43 r2EV, 3 I VK3GI h3t XVKh

Analytical Results

h RŁ @eĢx: WATER		Clier	Client sample ID	GW42D	GW43D	GW44D	DUP1	SPLIT1
	Clier	it samplin	Client sampling date / time	F1@ V@0113Tf00	F0@ V@01131Tf00	F0@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-021	EM1104286-022	EM1104286-023	EM1104286-024	EM1104286-025
EA005: pH								
pH Value		0801	- H3 mC	6.30	6.75	6.72	6.49	6.40
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	G\$\#10@10	-	u o/r	23400	19400	8860	3270	3100
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	c MX @10 @01	_	n o/r	۲۷	\ \	۲>	<1	^
Carbonate Alkalinity as CaCO3	Ya1F@F@	-	n o/r	<1	<1	<1	<1	۲>
Bicarbonate Alkalinity as CaCO3	j 1@F@	_	u o/r	143	410	881	184	186
Total Alkalinity as CaCO3		_	n o/r	143	410	881	184	186
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	/ DA							
Sulfate as SO4 - Turbidimetric	14a0a@8@	1	n o/r	14800	1090	5020	2140	1950
ED045G: Chloride Discrete analyser								
Chloride	11 aaj @ 0@	-	u o/r	3380	0986	450	99	64
ED093F: Dissolved Major Cations								
Calcium	j 440@0@	-	u o/r	375	427	399	246	243
Magnesium	j 4Y8@T@	_	n o/r	787	694	169	46	45
Sodium	j 440@Y@	-	u o/r	2450	5140	594	70	89
Potassium	j 440@8@	_	n o/r	217	212	48	16	15
EG020F: Dissolved Metals by ICP-MS								
Aluminium	j 4F8@0@	0801	n o/r	3.91	<0801	<0801	<0801	<0图1
Arsenic	j 440@a@	0001	u o/r	0.031	0.002	0.038	0.012	0.010
Cadmium	j 440@Y@	0E0001	u o/r	0.0012	0.0025	<050001	<08001	<000001
Cobalt	j 440@a@	0001	u o/r	99.6	0.075	0.051	0.024	0.024
Copper	j 440@0@	0001	u o/r	0.051	0.007	0.00	0.001	0.001
Lead	j 4Y8@F@	0001	u o/r	0.002	<08001	<0801	<0B001	<05001
Manganese	j 4Y8 ® @	0001	u o/r	120	7.63	10.5	4.03	3.88
Nickel	j 440@F@	0001	n o/r	2.82	0.067	0.072	0.020	0.007
Selenium	jjaF@8∰	0801	u o/r	0.03	<0.801	0.01	<0.801	<0801
Zinc	j 440@ @	OBOT	n o/r	2.20	0.016	0.032	0.071	0.013
Boron	j 440@F@	OB)T	n o/r	99.0	1.14	1.02	1.37	1.39
Iron	j 4Y8@8@	OBOT	u o/r	12.9	0.40	11.1	21.7	20.6
EG035F: Dissolved Mercury by FIMS								
Mercury	j 4Y8@gj @(0E0001	n o/r	0.0002	<0B0001	<050001	<050001	<08001
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	1aT40@8@	0801	u o/r	<01801	<01801	<01801	<01801	<0801
EK025G: Free cyanide by Discrete Analyser								
Free Cyanide		00004	n o/r	0.013	<015004	0.186	0.007	0.014
EK026G: Total Cyanide By Discrete Analyser								



f FT3_D340 f EM1104Fal 3 u∶mCu∶mC3 f ENJS/XNMEN, I rŒl V, H3nn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3t XVKh eo: d Lyk3XyO.y n R mC yLz AC

Analytical Results

h Rt @le Gw: WATER		Clie	Client sample ID		GW43D	GW44D	DUP1	SPLIT1
	Clie	ent samplir	Client sampling date / time	F1@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@01131Tf00	F0@ V@0113Tf00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-021	EM1104286-022	EM1104286-023	EM1104286-024	EM1104286-025
EK026G: Total Cyanide By Discrete Analyser -	- Continued							
	Tj @F@	0B004	u o/r	0.434	<015004	3.98	0.070	0.072
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser	iscrete Ana	lyser						
Weak Acid Dissociable Cyanide		0B004	n o/r	0.044	<0B004	0.865	0.016	0.014
EK040P: Fluoride by PC Titrator								
	11 8a4@a@	0BI	u o/r	1.0	0.3	9.0	1.1	1.1
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	j I I 4@1@	0801	u o/r	2170	4.11	1190	452	460
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N		01801	u o/r	0.02	<01801	0.03	<01801	<01801
EK058G: Nitrate as N by Discrete Analyser								
	14j 8j @T@	0801	n o/r	<0图1	0.01	0.03	<01801	<01801
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser	screte Anal	yser						
Nitrite + Nitrate as N		0801	n o/r	0.03	0.01	90.0	<0801	<0图1
EK071G: Reactive Phosphorus as P by discrete analyser	te analyser							
Reactive Phosphorus as P		0801	n o/r	<0图1	0.03	<01301	<0801	<01301
EK085M: Sulfide as S2-								
Sulfide as S2-	1a48l @T@	0BI	n o/r	<0Bl	<0Bl	<08	<0B	₩ 0>
EN055: Ionic Balance								
^ Total Anions		0891	n : d/r	407	309	135	50.1	46.0
^ Total Cations		0891	n : d/r		308			
Total Cations		0891	n : q/r	316		127	42.2	44.7
^ Ionic Balance		0891	%		0.25			
Ionic Balance		0891	%	12.5		3.09	8.55	1.53
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100@F@	_	ho/r	>	۲	<10	≺	>
Isopropylbenzene	8a@F@	_	ho/r			<10	≺T	>
n-Propylbenzene	10Y@T@	_	ho/r		Ļ	<10	Ţ	_>
1.3.5-Trimethylbenzene	10a@j @	-	ho/r	_	⊢	18	L	⊢ >
sec-Butylbenzene	1YT@a@	_	ho/r	_	₽	<10	₽	⊢ >
1.2.4-Trimethylbenzene	8T@Y@	_	ho/r	_	₽	49	₽	⊢ ≻
tert-Butylbenzene	8a@ @	_	ho/r	>	۲	<10	√	_>
p-IsopropyItoluene	88	_	ho/r	_≻		<10		_>
n-Butylbenzene	104@1@	_	ho/r	>	₽	<10	₽	_
EP074B: Oxygenated Compounds								
Vinyl Acetate	10a@T@	T0	ho/r	<t0< th=""><th><t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<100	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
2-Butanone (MEK)	j a @ Y@	10	ho/r	<t0< th=""><th><t0< th=""><th>520</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th>520</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	520	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>



f FI 3_Db40 f EM1104Fal 3 u : mOu : mCb f ENJS/XNMEN, I rŒI V, H3nn ŒNn Eh f F100j 43 r2EV, 3 I VK33I h3b XVKh

Analytical Results

Analytical results								
h Rt @elŷx: WATER		Clie	Client sample ID	GW42D	GW43D	GW44D	DUP1	SPLIT1
	Cli	ent samplii	Client sampling date / time	F1@ V@0113Tf00	F0@ V@0113Tf00	F0@ V@01131Tf00	F0@ V@0113Tf00	FO@ V@0113Tf00
Compound	CAS Number	LOR	Unit	EM1104286-021	EM1104286-022	EM1104286-023	EM1104286-024	EM1104286-025
EP074B: Oxygenated Compounds - Continued	penu							
4-Methyl-2-pentanone (MIBK)	10a@0@	T0	ho/r	<t0< th=""><th><t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<100	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
2-Hexanone (MBK)	Т81@а@	T0	ho/r	<t0< th=""><th><t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<100	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
EP074C: Sulfonated Compounds								
Carbon disulfide	j T@T@	⊥	ho/r	>		<10		>
EP074D: Fumigants								
2.2-Dichloropropane	T84@0@	⊢	ho/r	_>	>	<10	>	_>
1.2-Dichloropropane	j a @	⊢	ho/r	>	>	<10	>	L>
cis-1.3-Dichloropropylene	1001 1@1@	⊢	ho/r	₽	Τ>	<10		⊢ >
trans-1.3-Dichloropropylene	100l 1@F@	⊥	ho/r	≺T		<10	≺T	>
1.2-Dibromoethane (EDB)	10I @Y@	Τ	ho/r		>	<10	>	⊢
EP074E: Halogenated Aliphatic Compounds	spu							
Dichlorodifluoromethane	j T@1	T0	ho/r	<t0< th=""><th><t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<100	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Chloromethane	9 4	T0	ho/r	<t0< th=""><th><t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<100	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Vinyl chloride	Дер	T0	ho/r	<t0< th=""><th><t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<100	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Bromomethane	j 4@Y@	T0	ho/r	<t0< th=""><th><t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<100	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Chloroethane) TOO	T0	ho/r	<t0< th=""><th><t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<100	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Trichlorofluoromethane	j T@8@	10	ho/r	<t0< th=""><th><t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><100</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<100	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
1.1-Dichloroethene	j T@T@	-	ho/r	⊢	_>	<10	_>	⊢ ∨
Iodomethane	j 4 @a@	-	ho/r	⊢	_>	<10	_>	⊢ ∨
trans-1.2-Dichloroethene	1TI @0@	-	ho/r	_>	_>	<10		_>
1.1-Dichloroethane	ј Т ® 4®	-	ho/r	⊢	_>	<10		_>
cis-1.2-Dichloroethene	1TI @8@	-	ho/r	⊢	_>	<10	_>	⊢ ∨
1.1.1-Trichloroethane	j 1@T@	-	ho/r	_	_>	<10	>	⊢ ∨
1.1-Dichloropropylene	ш У@а@	-	ho/r	⊢	>	<10		_>
Carbon Tetrachloride	TI @Y@	_	ho/r	⊢	_>	<10	⊢	⊢ ∨
1.2-Dichloroethane	10] @	⊢	ho/r		_>	<10	>	_≻
Trichloroethene	j 8 @ 1@	⊢	ho/r	-≺	>	<10	-≺T	_>
Dibromomethane	j 4 ® T ®	_	ho/r	⊢	_>	<10	⊢	⊢ ∨
1.1.2-Trichloroethane) 8 @ 0@	⊢	ho/r	⊢	>	<10	_>	_≻
1.3-Dichloropropane	14F@a@	-	ho/r	_	>	<10	_>	⊢ ∨
Tetrachloroethene	1Fj @a@	_	ho/r	⊢	_>	<10	⊢	⊢ ∨
1.1.1.2-Tetrachloroethane	₩0₩0K1	-	ho/r	⊢	_>	<10		⊢ ∨
trans-1.4-Dichloro-2-butene	11000 @	-	ho/r	_	>	<10	_>	⊢ ∨
cis-1.4-Dichloro-2-butene	14j I @1@	_	ho/r	⊢	_>	<10	⊢	⊢ ∨
1.1.2.2-Tetrachloroethane	j 8@4@	_	ho/r	_>	>	<10	>	⊢ ∨
1.2.3-Trichloropropane	81 @a@	⊢	ho/r		>	<10	-≺_	_>
Pentachloroethane	j i	⊢	ho/r		>	<10	-≺_	_>
1.2-Dibromo-3-chloropropane	81 @F@	⊢	ho/r	≺T	>	<10	≺T	>



yLz AC

eo: d Lyk3XyO.y n R mC

f Fj 3_Db40 f EM1104Fal 3 u : mOu : mCb f ENJS/XNMEN, I rŒI V, H3nn ŒNn Eh f F100j 43 r2EV, 3 I VK33I h3b XVKh

Analytical Results

Analytical results								
h RŁ @leĢx: WATER		Ö	Client sample ID	GW42D	GW43D	GW44D	DUP1	SPLIT1
	Clie	int sampl	Client sampling date / time	F1@ V@0113Tf00	FO@ V@0113Tf00	F0@ V@01131Tf00	F0@ V@0113Tf00	FO@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-021	EM1104286-022	EM1104286-023	EM1104286-024	EM1104286-025
EP074E: Halogenated Aliphatic Compounds - Continued	s - Continued							
Hexachlorobutadiene	aj @a@	F	ho/r	_>	>	<10	-	
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	10a@0@	F	ho/r	8	>	<10		>
Bromobenzene	10a@ @	-	ho/r	>	>	<10		>
2-Chlorotoluene	8168	⊢	ho/r		₽	<10	Ļ	
4-Chlorotoluene	101 @Y@	-	ho/r		_	<10	-	_>
1.3-Dichlorobenzene	T41@Y@	-	ho/r	>		<10	-	>
1.4-Dichlorobenzene	101	⊢	ho/r	>	_>	<10		_>
1.2-Dichlorobenzene	8T@0@	-	ho/r	_	_	<10		_>
1.2.4-Trichlorobenzene	1F0@F@	-	ho/r	>		<10	-	>
1.2.3-Trichlorobenzene	aj @d	⊢	ho/r	>	_>	<10	>	⊢ ∨
EP074G: Trihalomethanes								
Chloroform		F	ho/r	₽	₽	<10	₽	
Bromodichloromethane) T	-	ho/r		_>	<10		_>
Dibromochloromethane	1F4@a@	⊢	ho/r	_>	_>	<10		_>
Bromoform	j Tætæ	-	ho/r	_>	⊢ >	<10		_>
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	arbons							
Naphthalene	81600	189	ho/r	21.3	<180	142	1.4	1.6
Acenaphthylene	F0a@ @	189	ho/r	<180	<18	<100	<18	× 18
Acenaphthene	a Y @F@	189	ho/r	<180	<118	<100	<18	<18
Fluorene	al @Y@	2	ho/r	<180	<18	<100	<18	× 18
Phenanthrene	aT@1@	6	ho/r	<180	2.0	<100	×18	× 18
Anthracene	1F0@F@	6	ho/r	<180	<180	<100	×18	× 18
Fluoranthene	F0I @4@	189	ho/r	<180	2.1	<100	<18	<18
Pyrene	1F8@0@	189	ho/r	<180	1.7	<100	<18	<180
Benz(a)anthracene	TI @T@	180	ho/r	<180	<18	<100	<18	<150
Chrysene	F1a@1@	189	ho/r	<180	<118	<100	<18	< 18
Benzo(b)fluoranthene	F0T@8@	189	ho/r	<180	<1180	<100	<18	<180
Benzo(k)fluoranthene	F0j @a@	180	ho/r	<180	<18	<100	<18	<150
Benzo(a)pyrene	T0@F@	08	ho/r	<0BT	<0BT	<tyb< th=""><th><0B</th><th><0B</th></tyb<>	<0B	<0B
Indeno(1.2.3.cd)pyrene	18700800	_	ho/r	<180	<18	<100	<1B	× 18
Dibenz(a.h)anthracene	TY@0@	-	ho/r	<180	<180	<100	<1B	< 18
Benzo(g.h.i)perylene	18164	-	ho/r	<180	<18	<100	<1B	× 18
^ Sum of polycyclic aromatic		08	ho/r	21.3	5.8	142	4.1	1.6
nydrocarbons								
EP080/071: Total Petroleum Hydrocarbons		i			i,			•
C6 - C9 Fraction		2	ho/r	470	0 V	3380	30	40
C10 - C14 Fraction		<u>1</u>	ho/r	2960	<t0< th=""><th>251000</th><th>480</th><th>530</th></t0<>	251000	480	530
							-	



ENJS/XNMEN, I r⊞I V, H3nn ÆNn Eh EM1104Fal 3 u:mQu:mGl

d Lyk3xyO.y

JLz AC n R mC

F100j 43 r2EV, 3 I VK3GI h3d XVKh

Analytical Results

FO@ V@01131T60 EM1104286-025 SPLIT1 1340 180 2190 9.68 30 20 130 2260 100 31.4 106 92.8 83.9 9 9 103 9 19 9 5 12 က 4 က က 9 œ FO@ V@0113Tf00 EM1104286-024 DUP1 230 1320 30 710 190 33.6 108 108 90.7 101 96.7 101 106 101 102 က 5 6 6 FO@ V@01131Tf00 Not Determined Not Determined EM1104286-023 Not Determined Not Determined Not Determined Not Determined GW44D 285000 230000 256000 1770 25000 1350 2540 712 285 150 435 103 21/ 102 46 FO@ V@0113Tf00 EM1104286-022 GW43D 97.9 99.8 19.4 40.8 95.0 95.4 98.9 180 210 390 <100 330 150 480 105 98.4 102 **20** Ϋ́ 쑤 120 7 ₹ ү \ Г 5 ₽ F1@ V@0113Tf00 EM1104286-021 GW42D 1410 1560 200 4720 1750 110 78.2 117 97.9 106 105 108 480 355 9 20 439 33 105 106 105 ₂ ك Client sample ID Client sampling date / time Unit ho/r ho/r po/r po/r po/r ho/r ho/r ho/r ho/r ho/r ho/r ho/r ho/r % % % % % % % % % % % % LOR EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft 5 5 5 8 8 8 요 요 8 8 8 8 8 8 ш ш ш ш ш 1j 0l 0@j @ F0Yj @j @ 1j 0l 0@j @ F0Yj @j @ j 1@PY∰ 8T@ @ 81600 1Y1Fj @a@ 8Y8T1@Y@ YF1@0@ CAS Number 10a**യു**a@ 100@1@ 10a@a@310l@F@ 17Y0億0億 4 00000 11a@8@ 1j 18@| @ 1j 1a@1@ 410000 EP080/071: Total Petroleum Hydrocarbons - Continued EP075(SIM)S: Phenolic Compound Surrogates EP080S: TPH(V)/BTEX Surrogates C6 - C10 Fraction minus BTEX (F1) EP075(SIM)T: PAH Surrogates **EP074S: VOC Surrogates** ^ >C10 - C40 Fraction (sum) ^ C10 - C36 Fraction (sum) 4-Bromofluorobenzene 4-Bromofluorobenzene 1.2-Dichloroethane-D4 1.2-Dichloroethane-D4 2.4.6-Tribromophenol meta- & para-Xylene >C16 - C34 Fraction >C34 - C40 Fraction >C10 - C16 Fraction hRt @deGx: WATER 2-Chlorophenol-D4 C15 - C28 Fraction C29 - C36 Fraction C6 - C10 Fraction 2-Fluorobiphenyl **EP080: BTEXN** 4-Terphenyl-d14 Anthracene-d10 Total Xylenes A Sum of BTEX Ethylbenzene ortho-Xylene Naphthalene Toluene-D8 Compound Phenol-d6 Benzene Toluene



กพิทC f ENJ S/y)LZ AC f F100j 4:

d Lyk3xyO.y

f EM1104Fal 3 u:m乙l:m囚 f ENJS/XNMEN, Ir歪l V, H3nn SENnEh f F100] 43 r2EV, 3 I VKS3I h3l XVKh

Analytical Results

FO@ V@01131Tf00 EM1104286-030 RINSATE-3 <0B004 <0B01 18@ V@01131Tf00 EM1104286-029 RINSATE-2 F1@ V@0113Tf00 EM1104286-028 SPLIT4 0.0013 <0B001 <0B001 0.025 0.045 21500 9.37 0.021 2450 118 2.81 0.03 2.15 6.29 785 0.67 140 140 12.4 ۲ FO@ V@0113Tf00 EM1104286-027 SPLIT3 <0B0001 0.043 0.002 0.002 0.020 0.015 <0B0001 0.013 0.011 <0B 0.34 0.11 <0個1 7.31 684 684 ₹ ₹ 46 47 35 55 16 FO@ V@0113Tf00 EM1104286-026 **DUP3** <0B0001 <0B0001 0.002 0.004 <0周0 0.010 0.041 0.001 0.021 0.013 2710 0.012 7.34 682 ⊽ ⊽ 43 50 36 57 16 Client sample ID Client sampling date / time - H3 mC u o/r u o/r n o/r u o/r u o/r n o/r u o/r u o/r u o/r n o/r u o/r u o/r u o/r u o/r n o/r u o/r u o/r n o/r u o/r u o/r u o/r u o/r Unit u o/r u o/r u o/r 0E0001 0B004 LOR 0E0001 0B001 00001 0B001 0B001 08001 OBOT 0891 0891 080 080 080 0801 0801 G\$\@10@10 G\$\@10@10 4Y8@F@ 4Y8@ @ j 1@F@ 4Y8@j 1aT40@8@ 14a0a@8@ 11 aaj **@**0@ 440@0@ 4Y8@T@ 440@Y@ 440@8@ 440@Y@ 440@ CAS Number c MX @10 @01 Ya1F@F@ 4F8@0@ 440@a@ 440@a@ 440@0@ 440@F@ jaF@8@6 440@F@ 4Y8@8@ ED041G: Sulfate (Turbidimetric) as SO4 2- by DA EK025G: Free cyanide by Discrete Analyser EG050F: Dissolved Hexavalent Chromium EG020F: Dissolved Metals by ICP-MS EG035F: Dissolved Mercury by FIMS ED045G: Chloride Discrete analyser **ED093F: Dissolved Major Cations** ED037P: Alkalinity by PC Titrator EA015: Total Dissolved Solids ^ Total Dissolved Solids @180°C Bicarbonate Alkalinity as CaCO3 Total Dissolved Solids @180°C Hydroxide Alkalinity as CaCO3 Carbonate Alkalinity as CaCO3 Sulfate as SO4 - Turbidimetric Total Alkalinity as CaCO3 Hexavalent Chromium h Rt @de Gw: WATER Free Cyanide EA005: pH Magnesium Manganese Compound Aluminium Potassium Cadmium Selenium pH Value Chloride Mercury Calcium Sodium Arsenic Copper Cobalt Nickel Boron Lead Zinc ron



ENJS/XNMEN, I r⊞I V, H3nn ÆNn Eh F100j 43 r2EV, 3 I VK3GI h3d XVKh EM1104Fal 3 u:mQu:mGl d Lyk3XyO.y JLz AC n R mC

Analytical Results

FO@ V@01131T60 EM1104286-030 RINSATE-3 <0B004 <0B004 <0B0 $\frac{1}{\sqrt{2}}$ ⊢ V F V **⊢ ⊢** F V 18@ V@01131Tf00 EM1104286-029 RINSATE-2 **⊢ ∀ ∀ ∀** F1@ V@0113Tf00 EM1104286-028 SPLIT4 0.456 0.037 2170 <0B01 1.0 0.02 0.01 0.04 ~0B ∀ **⊢ ∀ ∀** \vdash FO@ V@0113Tf00 EM1104286-027 SPLIT3 0.211 **220** <100 <100 <100 0.024 **205** <100 <100 <100 <100 66.4 64.8 1020 0.02 3.74 1.18 3.71 <0B0 0 0 8 0.3 FO@ V@0113Tf00 EM1104286-026 **DUP3** 0.253 <100 **102** <100 <100 0.021 <089 000 3.94 3.98 71.3 <100 205 0.3 0.0 0<u>B</u> Client sample ID Client sampling date / time u : q/r u : q/r u o/r Unit n o/r u o/r ho/r ho/r po/r po/r po/r uo/r ho/r % ho/r 0B004 LOR 0B004 0801 0891 0801 OB 0891 0801 089 089 1 EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser 08 œ O EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser 14j 8j @T@ 100@F@ Tj @E@ 8a@F@ EK071G: Reactive Phosphorus as P by discrete analyser 8T@Y@ CAS Number 11 8a4@a@ 11 4@1@ 1a48l@T@ 10Y@T@ 10a@j 1YT@a@ EP074A: Monocyclic Aromatic Hydrocarbons EK026G: Total Cyanide By Discrete Analyse EK055G: Ammonia as N by Discrete Analyse EK058G: Nitrate as N by Discrete Analyser EK057G: Nitrite as N by Discrete Analyser EK040P: Fluoride by PC Titrator Weak Acid Dissociable Cyanide Reactive Phosphorus as P EK085M: Sulfide as S2-EN055: Ionic Balance 1.2.4-Trimethylbenzene 1.3.5-Trimethylbenzene Nitrite + Nitrate as N hRt @legw: WATER sec-Butylbenzene Isopropylbenzene n-Propylbenzene Ammonia as N ^ Total Anions Nitrate as N Total Cyanide Sulfide as S2-Ionic Balance **Total Cations** Nitrite as N Compound Fluoride Styrene

ot > ر ا

6 6 6 6 V

<1000 <1000 <1000

<1000 <1000 <1000

ho/r ho/r ho/r

2 2 2 2

ja@Y@

T81@a@

10a@0@

4-Methyl-2-pentanone (MIBK)

2-Butanone (MEK)

Vinyl Acetate

2-Hexanone (MBK)

10a@T@

EP074B: Oxygenated Compounds

p-IsopropyItoluene

n-Butylbenzene

tert-Butylbenzene

₩ ₩ ₩

₩

₩

<100

<100 <100 <100

88

104@1@

8a@ @



f Y13.D#0 f EM1104Fal 3 u∶mCu∶mC3 f ENJS/XNMEN, I rŒl V, H3nn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3d XVKh

Analytical Results

h Rt @e∳x: WATER		Ö	Client sample ID	DUP3	SPLIT3	SPLIT4	RINSATE-2	RINSATE-3
	Clie	int samplii	Client sampling date / time	F0@ V@0113Tf00	F0@ V@0113Tf00	F1@ V@0113Tf00	18億 V億01131开00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-026	EM1104286-027	EM1104286-028	EM1104286-029	EM1104286-030
EP074C: Sulfonated Compounds								
Carbon disulfide	j T@T@	⊢	µo/r	<100	<100			_
EP074D: Fumigants								
2.2-Dichloropropane	T84@0@	⊢	ho/r	<100	<100	۲>		>
1.2-Dichloropropane	j a @ @	⊢	ho/r	<100	<100	₽	₽	
cis-1.3-Dichloropropylene	1001 1@1@	⊢	ho/r	<100	<100	₽	₽	
trans-1.3-Dichloropropylene	1001 1@F@	⊢	ho/r	<100	<100	₽	₽	T>
1.2-Dibromoethane (EDB)	10I @Y@	⊢	ho/r	<100	<100		Τ>	T>
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	j T@1@	T0	ho/r	<1000	<1000	oT>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Chloromethane	j 4 @	D	ho/r	<1000	<1000	OT>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Vinyl chloride	j T@1 @	D_	ho/r	<1000	<1000	OT>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Bromomethane	j 4@Y@	10 10	ho/r	<1000	<1000	OT>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Chloroethane) T @0 @	DT	ho/r	<1000	<1000	oT>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Trichlorofluoromethane	j T@8@	T0	ho/r	<1000	<1000	ΔT>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
1.1-Dichloroethene	j T@T@	⊢	ho/r	<100	<100	₽	₽	>
Iodomethane	j 4 @a@	⊢	ho/r	<100	<100	₽	₽	T>
trans-1.2-Dichloroethene	1TI @0@	⊢	ho/r	<100	<100	T>	₽	T>
1.1-Dichloroethane	j T@4@	⊢	ho/r	<100	<100	₽	₽	T>
cis-1.2-Dichloroethene	1TI @8@	⊢	ho/r	<100	<100	₽	₽	T>
1.1.1-Trichloroethane	j 1@T@	⊢	ho/r	<100	<100		≺T	T>
1.1-Dichloropropylene	TI Y@a@	⊢	ho/r	<100	<100	L	₽	T>
Carbon Tetrachloride	TI @Y@	⊢	ho/r	<100	<100	₽	₽	T>
1.2-Dichloroethane	10j 📵	F	ho/r	<100	<100	₽	₽	T>
Trichloroethene	j 8 @ 1@	⊢	ho/r	<100	<100	₽	₽	T>
Dibromomethane	j 4@T@	⊢	ho/r	<100	<100	₽	₽	T>
1.1.2-Trichloroethane) 8 @ 0@	⊢	ho/r	<100	<100	L ≻	Ļ	
1.3-Dichloropropane	14F@a@	⊥	µo/r	<100	<100	≺		
Tetrachloroethene	1Fj @a@	⊢	ho/r	<100	<100	₽	₽	
1.1.1.2-Tetrachloroethane	Y0@0@	⊢	ho/r	<100	<100	L ≻	Ļ	
trans-1.4-Dichloro-2-butene	11000 @	⊢	ho/r	<100	<100	₽	₽	
cis-1.4-Dichloro-2-butene	14j I @1@	⊢	ho/r	<100	<100	_	₽	>
1.1.2.2-Tetrachloroethane	j 8 6 40	⊢	ho/r	<100	<100	L ≻	Ļ	
1.2.3-Trichloropropane	81 @a@	⊢	ho/r	<100	<100		≺T	T>
Pentachloroethane	j.	⊢	ho/r	<100	<100	₽	₽	T>
1.2-Dibromo-3-chloropropane	81 @F@	⊢	ho/r	<100	<100	۲>		T>
Hexachlorobutadiene	aj @a@	⊢	ho/r	<100	<100	₽	₽	_>
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	10a@0@	⊢	ho/r	<100	<100	8	₽	



f YF3_D340 f EM1104Fal 3 u∶mOu∶mC3 f ENJS/XNMEN, I rŒl V, H35n ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3k XVKh

Analytical Results

h Rt @de∮x: WATER		Clie	Client sample ID	DUP3	SPLIT3	SPLIT4	RINSATE-2	RINSATE-3
	Clie	ent samplii	Client sampling date / time	F0@ V@01131Tf00	F0@ V@0113Tf00	F1@ V@01131Tf00	18@ V@01131Tf00	F0@ V@0113Tf00
Compound	CAS Number	LOR	Unit	EM1104286-026	EM1104286-027	EM1104286-028	EM1104286-029	EM1104286-030
EP074F: Halogenated Aromatic Compounds - Continued	- Continued							
Bromobenzene	10a@ @	⊢	ho/r	<100	<100	V	₽	T>
2-Chlorotoluene	8168	⊢	ho/r	<100	<100	⊢	>	>
4-Chlorotoluene	10I @Y@	-	ho/r	<100	<100	⊢	>	T>
1.3-Dichlorobenzene	T41@Y@	⊢	ho/r	<100	<100	⊢		>
1.4-Dichlorobenzene	101	⊢	ho/r	<100	<100	₽	₽	T>
1.2-Dichlorobenzene	8T@0@	⊢	ho/r	<100	<100	⊢	>	_≻
1.2.4-Trichlorobenzene	1F0@F@	⊢	ho/r	<100	<100	₽	⊢	T>
1.2.3-Trichlorobenzene	aj @1@	⊢	ho/r	<100	<100	⊢		_≻
EP074G: Trihalomethanes								
Chloroform	j	⊢	ho/r	<100	<100	⊢	_>	
Bromodichloromethane	(a) T	⊢	ho/r	<100	<100	⊢		>
Dibromochloromethane	1F4@a@	⊢	ho/r	<100	<100	₽	∀	⊢
Bromoform	j T@T@	⊢	ho/r	<100	<100	⊢	>	_≻
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ırbons							
Naphthalene	81600	180	ho/r	2980	2710	27.3	×18	<1B
Acenaphthylene	F0a@ @	189	ho/r	23.9	31.5	× 18	× 81-	×18
Acenaphthene	aY@F@	189	ho/r	<1013	<1080	× 18	× 81-	<1B
Fluorene	al @Y@	18	ho/r	15.4	14.6	× 18	×18	<1B
Phenanthrene	aT@1@	189	ho/r	<108	<1080	<1B	<18	<18
Anthracene	1F0@F@	189	ho/r	<1013	<108	× 18	×18	<18
Fluoranthene	FOI @4@	189	ho/r	<108	<1080	× 18	×18	×18
Pyrene	1F8@0@	189	ho/r	<1013	<1080	× 18	×18	<18
Benz(a)anthracene	TI @T@	189	ho/r	<1018	<1018	<180	× 81-	×18
Chrysene	F1a@1@	189	ho/r	<1018	<1080	× 18	×18	×1B
Benzo(b)fluoranthene	F0T@8@	189	ho/r	<1013	<1080	× 18	×18	<18
Benzo(k)fluoranthene	F0j @a@	189	ho/r	<1018	<1080	× 18	×18	<1B
Benzo(a)pyrene	TOOF	08	ho/r	₽\	< ™	<0B	<0B	<0B
Indeno(1.2.3.cd)pyrene	1870860	18	ho/r	<108	<1080	× 18	×18	×18
Dibenz(a.h)anthracene	TY@O@	9	ho/r	<108	<108	×18	×18	×18
Benzo(g.h.i)perylene	18164	18	ho/r	<108	<108	× 18	×18	<1B
^ Sum of polycyclic aromatic		08	ho/r	3020	2760	27.3	₩ 0>	<18
hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		F0	ho/r	0666	10200	460	<f0< th=""><th><f0< th=""></f0<></th></f0<>	<f0< th=""></f0<>
C10 - C14 Fraction		T0	ho/r	14200	12400	3070	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
C15 - C28 Fraction		100	ho/r	5510	4760	1880	<100	<100
C29 - C36 Fraction		10 10	ho/r	150	140	280	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
^ C10 - C36 Fraction (sum)		T0	ho/r	19900	17300	5230	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>



V

f EM1104Fal 3 u∶mOu∶mO3 f ENJS/XNMEN, IrÆl V, H3nn ŒNnEh f F100j 43 r2EV, 3 l VK3Gl h3l XVKh

d Lyk3xyO.y

n R mC

Analytical Results

FO@ V@01131T60 EM1104286-030 RINSATE-3 <F0 <100 <100 <100 <100 91.5 89.0 91.6 93.5 50.8 66.3 87.4 22.5 64.8 62.8 99.1 Ÿ T T T T **₽ ₽ ₽** 18@ V@01131Tf00 EM1104286-029 RINSATE-2 <100 <100 89.3 90.6 94.9 86.0 99 105 111 114 42.6 101 Å. Å **₩** Ϋ́ F1@ V@0113Tf00 EM1104286-028 SPLIT4 1760 3780 6.96 9.77 98.8 20 96.9 180 19.5 92.7 97.7 448 117 102 103 19 62 9 6 36 က FO@ V@0113Tf00 EM1104286-027 SPLIT3 12200 15900 2080 3740 <100 1600 766 2370 8020 97.6 97.0 91.5 287 119 92.8 40.0 106 5180 102 124 FO@ V@0113Tf00 EM1104286-026 **DUP3** 14200 18500 4320 <100 89.5 93.4 1560 728 2290 8030 5340 282 116 94.7 92.9 93.3 40.0 106 129 125 95.5 100 Client sample ID Client sampling date / time Unit ho/r ho/r ho/r ho/r ho/r ho/r ho/r ho/r ho/r % % % ho/r ho/r ho/r ho/r % % % % % % % % % LOR EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft 100 9 1 9 1 요요 8 8 8 OBI <u>B</u> 8 8 8 ட ш <u>B</u> ш ш ш 100@1@ YF1@0@ 1j 0l 0@j @ F0Yj @j @ 8T@ @ 17Y0億0億 1j 0l 0@j 8Y8T1@Y@ 11a@8@ CAS Number j 1@9Y@€ 10a@a@ 10a@a@310l@F@ 81600 F0Yj 📵 @ 410000 1Y1Fj @a@ 1] 18@ 1j 1a@1@ 410000 EP075(SIM)S: Phenolic Compound Surrogates EP080S: TPH(V)/BTEX Surrogates ^ C6 - C10 Fraction minus BTEX (F1) EP075(SIM)T: PAH Surrogates **EP074S: VOC Surrogates** ^ >C10 - C40 Fraction (sum) 4-Bromofluorobenzene 4-Bromofluorobenzene 1.2-Dichloroethane-D4 1.2-Dichloroethane-D4 2.4.6-Tribromophenol meta- & para-Xylene >C10 - C16 Fraction >C16 - C34 Fraction >C34 - C40 Fraction 2-Chlorophenol-D4 h Rt @de Gyx: WATER C6 - C10 Fraction 2-Fluorobiphenyl **EP080: BTEXN** Anthracene-d10 4-Terphenyl-d14 ^ Total Xylenes A Sum of BTEX Ethylbenzene ortho-Xylene Naphthalene Toluene-D8 Toluene-D8 Compound Phenol-d6 Benzene Toluene



f Y43_Dx40 f EM1104Fal 3 u∶mOu∶mC3 f ENJS/XNMEN, I rŒl V, H3sn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3k XVKh

Analytical Results

		Ĉ		L	G G H			
n R (@Jeyk: WAIER		3	ופווו אמוווטופ ווח	KINSAI E-4		IKIP4	GW19	DOP4
	O	ent samp	Client sampling date / time	F1@ V@0113ITf00	F0@ V@0113Tf00	F1@ V@0113ITf00	F0@ V@01131Tf00	F0@ V@01131Tf00
Compound	CAS Number	LOR	Unit	EM1104286-031	EM1104286-032	EM1104286-033	EM1104286-034	EM1104286-035
EA005: pH								
pH Value		0801	- H3 mC				5.43	6.22
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	G\$\@10@10	⊢	n o/r				2320	
Total Dissolved Solids @180°C	G\$\@10@10	⊢	u o/r					22600
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	c MX @10@01	-	n o/r				₹	^
Carbonate Alkalinity as CaCO3	Ya1F@F@	_	n o/r				٧	\ \ \
Bicarbonate Alkalinity as CaCO3	j 1@F@	~	n o/r				89	136
Total Alkalinity as CaCO3		-	u o/r				89	136
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	2- by DA							
Sulfate as SO4 - Turbidimetric	14a0a@8@	-	u o/r				700	14800
ED045G: Chloride Discrete analyser								
Chloride	11 aaj @ 0@	-	u o/r				26	2620
ED093F: Dissolved Major Cations								
Calcium	j 440@0@	-	n o/r				198	396
Magnesium	j 4Y8@T@	-	n o/r				69	812
Sodium	j 440@Y@	-	u o/r				51	2580
Potassium	j 440 @ 8@	1	u o/r				43	224
EG020F: Dissolved Metals by ICP-MS								
Aluminium	j 4F8@0@	0801	n o/r				0.17	3.15
Arsenic	j 440@a@	0001	u o/r				0.799	0.025
Cadmium	j 440@Y@	0E0001	u o/r				<018001	0.0013
Cobalt	j 440@a@	00001	u o/r				0.079	9.63
Copper	j 440@0@	0001	u o/r				0.001	0.048
Lead	j 4Y8@F@	0001	u o/r				<0B01	0.001
Manganese	j 4Y8 ® @	0001	u o/r				14.2	121
Nickel	j 440 @F@	0001	u o/r				0.021	2.84
Selenium	j j aF@8®	0801	n o/r				<0B01	0.03
Zinc	j 440 @ @	OBOT	u o/r				0.129	2.16
Boron	j 440@F@	OBOT	n o/r				1.86	99.0
Iron	j 4Y8@8@	OBOT	n o/r				309	12.8
EG020T: Total Metals by ICP-MS								
Aluminium	j 4F8@0@	0801	u o/r	<01801				
Arsenic	j 440@a@	0001	u o/r	<0B01				
Cadmium	j 440@Y@	0E0001	u o/r	<0 B 0001				
Cobalt	j 440@a@	0001	u o/r	<00001				
Copper	j 440@0@	0001	u o/r	<0图01				



Analytical Results

JLz AC

f ENJS/XNMEN, I ræl V, H3n ÆNnEh f F100j 43 r2EV, 3 I VK3GI h3l XVKh

f EM1104Fal 3 u:mOu:mGl

d Lyk3XyO.y

n R mC

h Rt @e Gw: WATER	O	Client sample ID	RINSATE-4	TRIP3	TRIP4	GW19	DUP4
	Client samp	Client sampling date / time	F1@ V@0113Tf00	F0@ V@01131Tf00	F1@ V@01131Tf00	F0@ V@0113Tf00	F0@ V@01131Tf00
Compound CAS Number	mber LOR	Unit	EM1104286-031	EM1104286-032	EM1104286-033	EM1104286-034	EM1104286-035
EG020T: Total Metals by ICP-MS - Continued							
	4Y8@F@ 0B001	u o/r	<0001				
Manganese j 4Y8@	® ⊕ 0B01	u o/r	<01801				
Nickel j 440	440@F@ 0B01	u o/r	<0001				
Selenium jjaf	ijaF@8@€ 01801	u o/r	<0周1				
Zinc j 440@	(C)	n o/r	<0BOT				
Boron j 440	440@F@ 0BDT	u o/r	<0BJT				
lron j 4Y8	j 4Y8@8@ 0BJT	u o/r	<0B0>				
EG035F: Dissolved Mercury by FIMS							
Mercury j 4Y8@	(B) (D) (DE) (D)	u o/r				<018001	<08001
EG035T: Total Recoverable Mercury by FIMS							
Mercury j 4Y8@	@ 0E0001	u o/r	<013001				
EG050F: Dissolved Hexavalent Chromium							
Hexavalent Chromium	1aT40@8@@ 0B01	u o/r	<0图1			<0图1	<01801
EK025G: Free cyanide by Discrete Analyser							
Free Cyanide	OB04	u o/r	<0圈04			<05004	0.016
EK026G: Total Cyanide By Discrete Analyser							
Total Cyanide Tj	Tj@F@ 0B004	n o/r	<0图04			0.080	0.509
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser	ete Analyser						
Weak Acid Dissociable Cyanide	OB04	u o/r	<0B04			<05004	0.046
EK040P: Fluoride by PC Titrator							
Fluoride 11 8a4	11 8a4@a@ 0Bl	u o/r				9.0	1.0
EK055G: Ammonia as N by Discrete Analyser							
Ammonia as N	j 11 4@1@ 0B01	u o/r	<0图1			184	2110
EK057G: Nitrite as N by Discrete Analyser							
Nitrite as N	(COM 0 B) 1	u o/r				0.01	0.05
EK058G: Nitrate as N by Discrete Analyser							
^ Nitrate as N 14j 8j	14j 8j @T@ 0B01	u o/r				0.15	<01801
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser	e Analyser						
Nitrite + Nitrate as N	(CON 0 B) 1	u o/r				0.16	0.05
EK071G: Reactive Phosphorus as P by discrete analyser	alyser						
Reactive Phosphorus as P	(CON 0 B) 1	u o/r				<0颐1	<0B01

A Campbell Brothers Limited Company

386

17.5

u : q/r u : q/r

0681

<0B

80∨

<0B

u o/r

<u>B</u>

1a48I @T@

EK085M: Sulfide as S2-

Sulfide as S2-

EN055: Ionic Balance

^ Total Anions ^ Total Cations



eo: d Lyk3XyO.y n R mC

yLz AC

f Y1 3_Db40 f EM1104Fal 3 u : mOu : mCb f ENJS/XNMEN, I rŒl V, H3sn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3k XVKh

Analytical Results

Control Cont	h Rt @le Фк: WATER		Clie	Client sample ID	RINSATE-4	TRIP3	TRIP4	GW19	DUP4
CASE Number CASE		Ci	ent samplin	ig date / time		F0@ V@0113Tf00	F1@ V@0113Tf00	F0@ V@0113Tf00	FO@ V@0113Tf00
	Compound	CAS Number	LOR	Unit	EM1104286-031	EM1104286-032	EM1104286-033	EM1104286-034	EM1104286-035
Compounds Comp	EN055: Ionic Balance - Continued								
Clic Aromatic Hydrocarbons Clic Aromatic	Total Cations		0.000	u : q/r					321
Composite bydrocarbons Composite bydrocarb	^ Ionic Balance		0801	%				3.89	
Single 1 1 1 1 1 1 1 1 1	Ionic Balance		0801	%					8.92
100@=6 1 port c1 c1 c1 c1 c1 c1 c1 c	EP074A: Monocyclic Aromatic Hydroca	arbons							
Seegle 1 poir cf cf cf cf cf cf cf c	Styrene		⊢	ho/r	₽	₽	Ļ	₽	⊢
100@10@ 1 100/10 1 1 100/10 1 1 100/10 1 1 1 1 1 1 1 1 1	Isopropylbenzene	8a@F@	_	ho/r	₽	₽	⊢ ∨	Ļ	Ļ
1 1 1 1 1 1 1 1 1 1	n-Propylbenzene	10Y@T@	-	ho/r	₽	L	₽	₽	⊢
	1.3.5-Trimethylbenzene	10a@j @	⊢	ho/r	₽	₽	⊢	∀	
Singleton Singleton Tableton Tableton	sec-Butylbenzene	1YT@a@	—	ho/r	₽	₽	Ļ	₽	Ļ
Seggg T poir cT cT cT cT cT cT cT c	1.2.4-Trimethylbenzene	8T@Y@	—	ho/r	₽	L	_≻	⊢	
Segge T poir c1 c1 c1 c1 c1 c1 c1 c	tert-Butylbenzene	8a@@	⊢	ho/r	₽	L>	⊢	⊢	₽
104@16 10 104@16 1 10 10 10 10 10 10 1	p-IsopropyItoluene	88	-	ho/r	-		_>	⊢ >	⊢
10@ 10	n-Butylbenzene	104@1@	⊢	ho/r		>	>	>	Τ>
1-a@106 10 poir c10	EP074B: Oxygenated Compounds								
1 a@r@ 10 a@r 1	Vinyl Acetate	10a@T@	T0	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Fig. 10a@0@ TO po/r CTO	2-Butanone (MEK)	j a@Y@	으	ho/r	<t0< th=""><th><t0< th=""><th>OT></th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th>OT></th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	OT>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Ted Compounds	4-Methyl-2-pentanone (MIBK)	10a@0@	으	ho/r	<t0< th=""><th><t0< th=""><th>oT></th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th>oT></th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	oT>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
Total Compounds Total Comp	2-Hexanone (MBK)	Т81@а@	T0	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
1 Ground 1 Ground	EP074C: Sulfonated Compounds								
145 184@0@ T po/r cT cT cT cT cT cT cT c	Carbon disulfide	j T@T@	⊢	ho/r	₽	⊢	₽	∀	∀
e TB4@0@ T µo/r <t< th=""> <th< th=""><th>EP074D: Fumigants</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<>	EP074D: Fumigants								
e jag@ T µo/r <t< th=""> <</t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<>	2.2-Dichloropropane	T84億0@	⊢	ho/r	T >	>	>	>	Τ>
pylene 1001 1@10@1 T µo/r <t< th=""> T µo/r <t< th=""> <t< th=""></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<>	1.2-Dichloropropane	ja 👜 🗇	⊢	ho/r				>	T>
ropylene 100 1@F@ T µo/r <t< th=""> <t< th=""></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<>	cis-1.3-Dichloropropylene	1001 1@1@	⊢	ho/r	Ļ		_≻	_≻	⊢
(EDB) 10 @V@ T µo/r <t< th=""> <t< th=""></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<></t<>	trans-1.3-Dichloropropylene	100l 1@F@	⊢	µo/r	T≻	>		>	T>
ated Aliphatic Compounds thane 17@1@ TO μo/r <to< th=""> <to< th=""></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<>	1.2-Dibromoethane (EDB)	10I @Y@	⊢	ho/r			₽	፟	∀
thane jt@i@ TO μo/r <to< th=""> <to< th=""><th>EP074E: Halogenated Aliphatic Compo</th><th>spuno</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<>	EP074E: Halogenated Aliphatic Compo	spuno							
14@ 10 100/r 100	Dichlorodifluoromethane	j T@1@	T0	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
100 100	Chloromethane	j 4 🙉 🗷	으	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
tane 14@K@ TO µo/r <to< th=""> <to<< th=""><th>Vinyl chloride</th><th>j T@1</th><th>OT</th><th>ho/r</th><th><t0< th=""><th><t0< th=""><th><70</th><th><70</th><th><t0< th=""></t0<></th></t0<></th></t0<></th></to<<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<>	Vinyl chloride	j T@1	OT	ho/r	<t0< th=""><th><t0< th=""><th><70</th><th><70</th><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><70</th><th><70</th><th><t0< th=""></t0<></th></t0<>	<70	<70	<t0< th=""></t0<>
name jT@0@ TO µo/r <to< th=""> <to<< th=""><th>Bromomethane</th><th>j 4@Y@</th><th>T0</th><th>ho/r</th><th><t0< th=""><th><t0< th=""><th><70</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></to<<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<>	Bromomethane	j 4@Y@	T0	ho/r	<t0< th=""><th><t0< th=""><th><70</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><70</th><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<70	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
name j T@S@ TO µo/r <to< th=""> <to< th=""><th>Chloroethane</th><th>j T@O®</th><th>으</th><th>ho/r</th><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<></th></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<></to<>	Chloroethane	j T@O®	으	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""></t0<></th></t0<>	<t0< th=""></t0<>
100 100	Trichlorofluoromethane	j T@8@	OT	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th><70</th><th><t0< th=""></t0<></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th><70</th><th><t0< th=""></t0<></th></t0<></th></t0<>	<t0< th=""><th><70</th><th><t0< th=""></t0<></th></t0<>	<70	<t0< th=""></t0<>
thene T µo/r <t< th=""> <t< th=""> <t< th=""> jT@@ T µo/r <t< td=""> <t< td=""> <t< td=""></t<></t<></t<></t<></t<></t<>	1.1-Dichloroethene	j T@T@	_	ho/r	T≻	L≻	>		
thene 1Π @0@ T μο/г <t< th=""> <t< th=""> <t< th=""></t<></t<></t<>	Iodomethane	j 4 @ a @	⊢	µo/r	T≻			>	T>
jT @4@ T po/r <t <t="" th="" ="" <=""><th>trans-1.2-Dichloroethene</th><th>1TI @0@</th><th>⊢</th><th>ho/r</th><th></th><th></th><th></th><th>></th><th>T></th></t>	trans-1.2-Dichloroethene	1TI @0@	⊢	ho/r				>	T>
	1.1-Dichloroethane	j T@4@	F	ho/r	_		_>	_	>



EM1104Fal 3 u: mQu: mC3 d Lyk3XyO.y JLz AC n R mC

ENJS/XNMEN, I r⊞I V, H3nn ÆNn Eh F100j 43 r2EV, 3 I VK3GI h3d XVKh

Analytical Results

FO@ V@01131T60 EM1104286-035 DUP4 × 18 × 8 25.5 < 1B Ļ. Ļ ⊢ V F V V ⊢ v F V **⊢** Ļ \vdash ⊢ V Ļ. **⊢ ⊢** Ļ ⊢ V ۱- $\frac{1}{\sqrt{2}}$ ω S) FO@ V@0113Tf00 EM1104286-034 **GW19** × 8 **∀ ∀** ∀ \vdash \vdash \vdash \vdash V ∀ **∀ ∀** ∀ **▽ ▽** ∀ ∀ \ V \vdash ∀ **∀ ∀** F1@ V@0113Tf00 EM1104286-033 TRIP4 × 18 ^ ₩ **₩** ∀ Ļ \vdash \ V \vdash V FO@ V@0113Tf00 EM1104286-032 TRIP3 ×18 × 18 ×18 \ V V \ V ₩ ₩ $\overline{}$ \ V <u>_</u> \overline{V} ₩ ∀ ∀ **₩** ₽ **∀** ⊢ V ∀ $\overline{}$ V $\overline{\mathsf{v}}$ ∀ F1@ V@0113Tf00 EM1104286-031 RINSATE-4 ×18 **₩ ₩**
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 □
 ₩ ₩ Ļ **₩ ₩** Ļ. Client sample ID Client sampling date / time ho/r ho/r ho/r ho/r ho/r po/r po/r po/r ho/r po/r po/r po/r po/r ho/r Cnit ho/r LOR 8 8 8 8 101 @Y@ 101 @ F0a@ @ TI @Y@ 10j 🔞 🛞 81 @a@ 8T@8@ T41@Y@ 1F0@F@ 1TI @8@ j 8@1@ j 4@T@ j8@4@0 j **@** 81 @F@ 8T@0@ aj @1@ **8** j Tætæ aY@**F@** al @Y@) YO (100) CAS Number T Y@a@) 8@0@ 14F@a@ 1Fj @a@ 1100000 14j l @1@ aj @a@ 10a@0@ 10a@ @ 1F4@a@ 81600 EP074E: Halogenated Aliphatic Compounds - Continued EP075(SIM)B: Polynuclear Aromatic Hydrocarbons EP074F: Halogenated Aromatic Compounds 1.2-Dibromo-3-chloropropane **EP074G: Trihalomethanes** trans-1.4-Dichloro-2-butene 1.1.1.2-Tetrachloroethane 1.1.2.2-Tetrachloroethane cis-1.4-Dichloro-2-butene Bromodichloromethane Dibromochloromethane 1.2.3-Trichloropropane 1.2.3-Trichlorobenzene cis-1.2-Dichloroethene 1.2.4-Trichlorobenzene 1.1-Dichloropropylene 1.1.1-Trichloroethane Carbon Tetrachloride 1.1.2-Trichloroethane Hexachlorobutadiene 1.3-Dichloropropane 1.3-Dichlorobenzene 1.4-Dichlorobenzene 1.2-Dichlorobenzene h Rt @legw: WATER 1.2-Dichloroethane **Pentachloroethane** Tetrachloroethene Dibromomethane Trichloroethene 4-Chlorotoluene 2-Chlorotoluene Acenaphthylene Chlorobenzene **Bromobenzene** Acenaphthene Naphthalene Bromoform Chloroform Compound Fluorene



f Ya1.bbd f EM1104Fal 3 u∶mOu∶m3d f ENJS/XNMEN, I rÆl V, H3nn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3t XVKh

Analytical Results

hRt @Jeoyk: WATER		Cļi	Client sample ID	RINSATE-4	TRIP3	TRIP4	GW19	DUP4
	Clie	nt samplii	Client sampling date / time	F1@ V@0113Tf00	F0@ V@0113Tf00	F1@ V@01131Tf00	F0@ V@0113Tf00	FO@ V@0113Tf00
Compound	CAS Number	LOR	Unit	EM1104286-031	EM1104286-032	EM1104286-033	EM1104286-034	EM1104286-035
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued	rbons - Contir	pen						
Phenanthrene	aT@1@	189	ho/r	<180	<180	<18	<18	× 18
Anthracene	1F0@F@	99	ho/r	<18	<180	× 18	× 18	× 18
Fluoranthene	F0I @4@	8	ho/r	<18	<180	× 18	× 81-	× 18
Pyrene	1F8@0@	99	ho/r	<180	<180	× 18	<18	× 18
Benz(a)anthracene	TI @T@	99	ho/r	<18	<180	× 18	× 18	× 18
Chrysene	F1a@1@	189	ho/r	<18	<180	<180	<18	× 18
Benzo(b)fluoranthene	F0T@8@	6	ho/r	<180	<180		× 8	× 18
Benzo(k)fluoranthene	F0j @a@	8	ho/r	<18	<180		× 891-	× 18
Benzo(a)pyrene	TOOF	08	ho/r	<0 B	<08	40₽	<0⊞	<0B
Indeno(1.2.3.cd)pyrene	18Y@8@	8	ho/r	<18	<180	× 81-	× 891×	× 18
Dibenz(a.h)anthracene	TY@0@	8	ho/r	<18	<180		× 891-	× 18
Benzo(g.h.i)perylene	18164	8	ho/r	<18	<180	× 18	× 81-	× 18
^ Sum of polycyclic aromatic		08	ho/r	<18	<180	× 81-	<18	25.5
hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		F0	ho/r	<f0< th=""><th><f0< th=""><th><f0< th=""><th><f0< th=""><th>480</th></f0<></th></f0<></th></f0<></th></f0<>	<f0< th=""><th><f0< th=""><th><f0< th=""><th>480</th></f0<></th></f0<></th></f0<>	<f0< th=""><th><f0< th=""><th>480</th></f0<></th></f0<>	<f0< th=""><th>480</th></f0<>	480
C10 - C14 Fraction		2	ho/r	<t0< th=""><th><t0< th=""><th>OT></th><th><t0< th=""><th>2910</th></t0<></th></t0<></th></t0<>	<t0< th=""><th>OT></th><th><t0< th=""><th>2910</th></t0<></th></t0<>	OT>	<t0< th=""><th>2910</th></t0<>	2910
C15 - C28 Fraction		100	ho/r	<100	<100	<100	1110	1500
C29 - C36 Fraction		Т0	ho/r	<t0< th=""><th><t0< th=""><th><t0< th=""><th>140</th><th>200</th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th>140</th><th>200</th></t0<></th></t0<>	<t0< th=""><th>140</th><th>200</th></t0<>	140	200
^ C10 - C36 Fraction (sum)		으	ho/r	<t0< th=""><th><t0< th=""><th>oT></th><th>1250</th><th>4610</th></t0<></th></t0<>	<t0< th=""><th>oT></th><th>1250</th><th>4610</th></t0<>	oT>	1250	4610
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft	- NEPM 2010	Draft						
C6 - C10 Fraction		F0	ho/r	<f0< th=""><th><f0< th=""><th><f0< th=""><th><f0< th=""><th>480</th></f0<></th></f0<></th></f0<></th></f0<>	<f0< th=""><th><f0< th=""><th><f0< th=""><th>480</th></f0<></th></f0<></th></f0<>	<f0< th=""><th><f0< th=""><th>480</th></f0<></th></f0<>	<f0< th=""><th>480</th></f0<>	480
^ C6 - C10 Fraction minus BTEX (F1)		9 9	ho/r	<f0< th=""><th><f0< th=""><th>O.≯</th><th><f0< th=""><th>09</th></f0<></th></f0<></th></f0<>	<f0< th=""><th>O.≯</th><th><f0< th=""><th>09</th></f0<></th></f0<>	O.≯	<f0< th=""><th>09</th></f0<>	09
>C10 - C16 Fraction		100	ho/r	<100	<100	<100	120	1700
>C16 - C34 Fraction		100	ho/r	<100	<100	<100	1100	1370
>C34 - C40 Fraction		100	ho/r	<100	<100	<100	<100	100
^ >C10 - C40 Fraction (sum)		100	ho/r	<100	<100	<100	1220	3170
EP080: BTEXN								
Benzene	j 1@Y@	_	ho/r	<u>\</u>	₹			334
Toluene	10a@a@	ш	ho/r	₹	< F>	√F	₹	63
Ethylbenzene	100@1@	ш	ho/r	₽	₽	₽	₹	3
meta- & para-Xylene 10a@	10a@a@310l @F@	ш	ho/r	₽	4	₽	₽	11
ortho-Xylene	8T@ @	ш	ho/r	₽	₽	₽	₽	6
^ Total Xylenes	1770@0@	ш	ho/r	₽	₽	₽	₽	20
^ Sum of BTEX		-	ho/r		₹			420
Naphthalene	81600	⊢	ho/r	Ļ	₽	₽	₽	36
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	1j 0l 0@j	0BI	%	94.5	94.9	98.1	93.7	104



ALS

f Y83.1640 f EM1104Fal 3 u:mCu:mC3 f ENJS/XNMEN, IrÆIV, H3:n ÆNnEh f F100j 43 r2EV, 3 I VK3SI h33 XVKh

d Lyk3XyO.y

n R mC

Analytical Results

FO@ V@01131Tf00 EM1104286-035 DUP4 91.9 95.6 13.9 97.7 109 108 101 FO@ V@01131TF00 EM1104286-034 **GW19** 102 93.9 95.1 95.0 86.3 15.7 33.4 102 F1@ V@0113Tf00 EM1104286-033 TRIP4 95.1 22.7 114 106 7.5.7 92.2 95.0 106 F0@ V@0113Tf00 EM1104286-032 TRIP3 94.9 34.7 90.2 94.4 95.1 114 106 102 F1@ V@0113Tf00 EM1104286-031 RINSATE-4 65.7 79.0 66.7 100 93.2 98.8 96.4 28.4 84.0 Client sample ID Client sampling date / time Unit % % % % % % % % % % % LOR 80 80 8 8 8 8 8 1j 0l 0@; @ F0Yj @ @ CAS Number F0Yj 📵 @ YF1@0@ 4| 00000 1Y1Fj @a@ 8Y8T1@Y@ 11a@8@ 1j 1a@1@ 4| 00000 1j 18@ @ EP075(SIM)S: Phenolic Compound Surrogates EP074S: VOC Surrogates - Continued EP080S: TPH(V)/BTEX Surrogates EP075(SIM)T: PAH Surrogates 4-Bromofluorobenzene 1.2-Dichloroethane-D4 4-Bromofluorobenzene 2.4.6-Tribromophenol h Rt @deGw: WATER 2-Chlorophenol-D4 2-Fluorobiphenyl 4-Terphenyl-d14 Anthracene-d10 Toluene-D8 Compound Phenol-d6



ALS

Surrogate Control Limits

f 403.1B40 f EM1104Fal 3 u∶mCu∶mC3 f ENJS/XNMEN, I rŒl V, H3nn ŒNn Eh f F100j 43 r2EV, 3 I VK33l h3t XVKh

eo: d Lyk3XyO.y n R mC

yLz AC

hR @degw: WATER		Recovery Limits (%)	Limits (%)
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	1j OI O@j	jF	1 / F
Toluene-D8	F0Yj @ @	þ Í	1Fa
4-Bromofluorobenzene	41 0000	j 0	1\F
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	1Y1Fj @a@	10	Та
2-Chlorophenol-D4	8Y8T1@Y@	10	1F4
2.4.6-Tribromophenol	11a@8@	正	1Ya
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	YF1@0@	⊭	11F
Anthracene-d10	1j 18@ @	Α,	14
4-Terphenyl-d14	1j 1a@1@	74	140
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	1j 0l 0@j @	Υĺ	171
Toluene-D8	F0Yj @ @	jΕ	1F4
4-Bromofluorobenzene	410@0@	j 0	18

EDO PORWAT (or default): ENARG & ESCAT CONTACT PH: 6437 633 796 SAMPLER MOBILE: 6437 633 796 DATE / TIME SAMPLE DETAILS MATRIX: Sold(S) Water(W)

6.55 47.80 6.51 18.00

Environmental Division Melbourne EM1104286 Work Order

> 7.00 19.70 7.28 19.20 6.24 18.20 N. 3

11

Telephone: +61-3-8549 9600

Same analysis as per bound Commerce of the control of the contr

42

25 - 25 mm

Extra 34 35

ANALYSIS REQUIRED Including SUITES (#8 Suite Codes

SAMPLEID

MBID

ALS USE CNLY

ENT; Environmental Earth Sciences FIDE: P.O. BOX 2253, FOOTSCRAY; VIC, 3011 OJECT: 210074 ALEERT PARK GAS WORKS

CHAIN OF CUSTODY





Environmental Division

QUALITY CONTROL REPORT

: 1 of 6L		:vEmole e Eyal Mmmsnone u elroctEe :iatolhalsd	: 0 h esyall A. W4trEgnale I J Vcsytalna 61p1	: Ratol@ alsdj alseEmto@bD : w+17678309 9+L8	: NvPu 1999 WRde.cle X(6) aE. VbWQi W6 teqcneDeEy	: 517VPA 75L11	: 6L加 VY汚L11		. 63	: 63
Page		bar otayotC i o EyaRy	V. tess	v 7Danh Tele4doEe Fabraha	Qi benel	Maye WaD 4 les Ae Remne.	Jesce Maye		NoOof saD4les teReme.	NoOof saD4les aEalGse.
: EM1104Am	.	: ERTIHORMERSt C Et HS5 p(IER(Ep : u A MVI M SVu v W	: PG®ŒB2 5536 FBBTW AVYIJ, VUWTAVbJV6L11	:aDesj eesron@ :w+19+8p1+++ :w+1 = 0+8p18p0	: 51LLp0 VbXv AT PVAK GVWh BAKW	: :		:		: u v /L13/11 6
Work Order	t NeVdNeVI	i ne Ey i o Eya Ry	V. tess	v刀arl Tele4do臣 Eabenha	Pto-eRy Wije	i 787 EcDret	W&D4let	Bt. et EcDr et		Qcoye EcDret

ţ Tidns te4oty sc4etse. es a EC 4termorcs te4oty(s) znyd ydns tefeteEReO Aeschys a441C yo yde saD4le(s) as scrDnye. O VII 4ages of ydns te4oty dame reeE RdeRke. a E. a4440me. teleaseO

Tdrs QcalryCi oEytol Ae4otyRoEyarEs yde folloz rEg rEfotDayroE:

- bar otayot CMc4InPaye (MJP) Ae4oty, Aelayme PetPEFage MiffeteEPe (APM) aE. VRPe4yaFPe bnD nys
 - u eydo. XlaEk (u X) aE. bar otayotCi oExtol W#Ike (bi W) Ae4oty; AeRonetCaE. VRRe4yaERe biD ys
- u aytrx W4rke (u W) Ae4oty, AeRometCaE. VRe4yaRe brDrys

NVTV VRRe. nje. bar otayotC853	Toins.on&DeEyns.nssce.ntE aRAOt.aEReznyd.NVTV aRAYe.nyaynoEteqonleDeEysO
<	NATA

WORLD RECOGNISED
ACCREDITATION

	Tdns .oRcDeEy das reeE eleRytoEnRallC sngEe. rC	Rattre. ocynE RoD4InaERe z nyd 4toRe. ctes s4eRfre. nE51	Dosition
	reeE	ERezind.	
	das	4 18	
Signatories	. oRcDeEy	ocyrE RoD	o o izio
Sign	Tdrs	Rattre.	Oignotorio

	Tdrs . oRcDeEy das r	Tolos o Pac De Ey das ree E ele Ryto EmPall C sing Ee. r C y de a cydotringe. sing Eayotmes n E. mPaye. reloz O v le Ryto En R sing En Eg das ree E	ngEayotnes nE.nR	aye. reloz O v leRyto EnR	sing Enteg	as re	ЭeЕ
Tdrs.oRDeEyrs rssce. rE	Rattre. ocynERoD4InaERe	Pattne. ocynERoD4lnaEReznyd4toRe.ctess4eRine.nE51 i FAPaty110					
aRRot. a ERe z ryd NVTV	Signatories	Position	4	Accreditation Category			
aRRe. nyaynoEteqcnleDeEysO	MhaEnFetEaE. o	WeErot EotgaErRi deDisy	ח	u elr octEe ÆotgaEnRs			
	v tnRi dac	u eyals TeaD bea. et	ם	u elroctEe ÆotgaEnRs			
VANCE: 19E: 10t NOT HIRDRED IN	HetDaE brE	bar otayotCi oot. rEayot	n	u elroctEe ÆotgaEnRs			
	NaERCh aEg	WEEnot WED mmolayme EsytcDeEyi deDrsy		u elroctEe BtgaEnRs			
	NrkknWje4Erezskn	WEEnot EotgaEnREsytcDeEyi deDrsy		u elr octEe ÆotgaEnRs			
	Wenne Eu RGtayd	A Campbell Brothers Limited Contact of a Eaget	n	u elr octEe BtgaEnRs			
	2 For 15 hr	WEENT BLOSEN		HolroctEo Bina Free			



h otk Bt. et : v u 11L058+ VDeE. DeEy1 i lneEy : v NI JABNu vNTVb vVATH W Jr Ni vW Pto-eRy : 51LLp0 VbXvAT PVAK GVWh BAKW

General Comments

Tde a EalOpheal 4to Rectes cse. rCyde v Ennote DeEyal Minnasho E dame ree E. emelode. 110D esyarlisde. nEyet Eayon EalIC terbog En 68. etes scret as ydose 4crinsde. rCyde UWW PV, VW a E. Nv Pu O E. docse emelo4e. 4to Re. ctes ate eD4lo Ce. nEyde ar seERe of . oRc DeEye. syaE. at. s ot r CR neEy teqcesyO

h dete Dorsycte . eyetDrEaynoEdas r eeE4etfotDe. , tesclys ate te4otye. oEa . tCz engdyrasnsO

h dete a te4otye. less ydaE(<) tesciyns dngdet ydaEyde bBA, ydns DaCre. ce yo 4tmDatCsaD4le ex体aRy, ngesyaye. ncynoEaE. /ot nEscrifneBysaD4le fot aEalOnso

h dete yde b BA of a te4otye. tescly. rifets fto D syaE at. b BA, ydns D a Cre.ce yodngd Donsycte Po EyeEy nEschfin ReEysaD 41e (te. che. zengdyeD 41e 02.) ot Daytor nEyet fete EReO

VEoECD ocs = Aefets yo saD4les z dnAd ate Eoys4eRnfnAllC4atyof ydns z otk ot. et r cyfotDe. 4atyof yde Qi 4toPess loy KeC:

i VWNcDret = i VWtegrsytCEDret ftoD, ayarase DarBarEe, r Ci deDrRal VrsytaRs WetminesOTde i deDrRal VrsytaRs vetminesoTde i deDrRal vorsytaRs vetminesoTde i deDrRal bBA = briDry of te4otyrEg

APM = Aelaymoe PetreEyage Minfete Ere

A FINI - Aelayiile FetreEyaq # = E. mayes fante. Qi



· VNI JABNU VNTVB VVATH W JVNI VW : vu 11L058+ VDeE. DeEy1

: 6 of 6L

h otk Bt. et i IneEy PtoeRy

: 51LLp0 VbXv AT PVAK GVWh BAKW

Laboratory Duplicate (DUP) Report

Tde qualinyc Polstol yetD barotayotc Mc4linPaye tefets yo a tale oDIC selenPye. restalarotayotc s4linyc barotayotc .c4linPayes 4 tomin e inEfotDayone tegat. neg Deydo. 4 tenPasione ale sapetinge. The version of barotayotc Mc4linPayes ate s4erNine. Ine VbW u eydo. Qh J7v N/68 ale. ate .e4e. e5y of yet Dagleyo. e of tesclys ne PonPatinsole yo yet lennel of te4otynEg: Aescly < 1 LyDes bBA:7 No brDny, AesclyreyzeeE1LaE5LynDesbBA:7L%73L%; Aescly>5LynDesbBA:7L%75L%O

Wcr 7u aytrx: Wt SEH				-		Laboratory D	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Et 000, 75 8 (Col:	Col: 1anl nDai								
v u 11L05087LL1	VEoE@ocs	v VLL3: 4H I alce	шш	L@1	4H UEry	8086	803	LG	L% 75L%
vu 11L058+7LL3	Gh 11	v VLL3: 4H I alce	Ш.	L@1	4H UEry	3@3	3@+	LG	L% 75L%
Et 000, 75 8 (Col:	Col: 1anl nDmi								
vu 11L058+7L1+	Gh 5p	v VLL3: 4H I alce	<i>1111</i>	L@1	4H UEry	b @ L	p @ 8	F@	L% 75L%
v u 11L058+7L53	WPbJT1	v VLL3: 4H I alce	шш	L@1	4H UEn	70+	+01	E@	L% 75L%
Et 01Q Solsv6 PPow	Et 0102 Solsv6 3PPowyed pow3dP 8) (Col: 1anlm0mi	ü							
vu 11L058+7LL6	Gh 9	v VL13H: Toyal Mssolne. Wolnsj 18L°i	GJW51L7L1L	3	Dg/b	308	310	0+	L% 75L%
Et 01Q Solsv6 PPow	Et 0102 Solsv6 3PPowyed powalP 8) (Col: 1an Ca0ni	=							
v u 11L050p7LL1	VEoECD ocs	v VL13H: Toyal Mrssolne. Wolnsj 18L°i	GJW751L7L1L	က	Dg/b	053LL	059LL	67	% 12F%
vu 11L058+7L1	Gh 6	v VL13H: Toyal Missolne. Woln sj 18L°i	GW51L7L1L	က	Dg/b	601L	930L	Ф0	L% 75L%
Et 01Q Solsv6 PPow	Et 0102 Solsv6 3PPowyed powadP 8) (Col: 1an Ca0ai								
vu 11L058+7L10	Gh 50	v VL13H: Toyal Mrssolne. Wolnsj 18L°i	GJW551L7L1L	က	Dg/b	7900	7+00	θΊ	L% 75L%
vu 11L058+7L53	WPbJT1	v VL13H: Toyal Missolne. Wolnsj 18L°i	GJW51L7L1L	က	Dg/b	61LL	615L	ΨП	L% 75L%
E60lab:t vksv3/39G	E601ab:tvksw3v39CBb(S3rslor 8)(Col:1anC4a1i	#a1i							
vu 11L05867L56	VEoECD ocs	v ML6p7P: HC toxn e VlkalnEryCas i ai B6	Mu B 711711	-	Dg/b	^	۲-	ΓΦ	No briD ry
		v ML6p7P∶i atroEaye VlkalnEnyCas i ai B6	68157657+	_	Dg/b	۲>	۲ <u>۰</u>	ΓΦ	No briD ry
		vML6p7P:XnPatroEayeVlkalnEnyCasiaiB6	p173576	_	Dg/b	۲۷	۲۷	ΓΦ	No briD ry
		v ML6p7P: Toyal VIkalr哲yCas i ai B6	<i>1111</i>	_	Dg/b	Ÿ	, V	ГФ	No briD ry
vu 11L05837LL6	VEoE@ocs	v ML6pP: HC toxn e VlkalrEryCas i ai B6	Mu B 7211	1	Dg/b	۲>	۲۷	ΓŒ	No briD ry
		v ML6p7P:i atroEaye VlkalnEnyCasiai B6	681576574	_	Dg/b	۲ <u>۰</u>	<u>۲</u>	ΓŒ	No briD ry
		v ML6p7P: XnPatroEaye VlkalnEnyCasiaiB6	p173576	_	Dg/b	1+8	1+8	ΠŪ	L% 75L%
		v ML6p7P: Toyal VlkalrEnCas i ai B6	Ш.	_	Dg/b	1+8	1+8	ΓŒ	L% 75L%
E60lab:t vksv3/39 G	E60lab:twksw3v39G9b(S3rslor8)(Col:1anC4aAi	На Аі							
v u 11L058+7LL9	Gh 13	v ML6p7P: HC toxn e VlkalnEnyCas i ai B6	Mu B 7511711	_	Dg/b	۲۷	۲	ΓΦ	No briD ry
		v ML6p7P:i atroEaye VlkalnEnyCasiai B6	68157657+	_	Dg/b	۲۷	٧.	ΓΦ	No briD ry
		v ML6p7P: XnPatroEaye VlkalnEnyCasiaiB6	p173576	1	Dg/b	2+	2+	ΓŒ	L% 75L%
		v ML6p7P: Toyal VIkalr哲yCas i ai B6	Ш.	1	Dg/b	2+	2+	ΓŒ	L% 75L%
vu 11L058+7L18	Gh 69	v ML6pP: HC toxn e VlkalrEryCas i ai B6	Mu B 7211	_	Dg/b	۲۷	۲۷	ΓΦ	No briD ry
		v ML6p7P:i atroEaye VlkalnEnyCasiai B6	681576574	_	Dg/b	۲ ۰	۲ <u>۰</u>	ΓŒ	No briD ry
		v ML6p7P: XnPatroEaye VlkalnEnyCasiaiB6	p173576	_	Dg/b	513	51+	r _G	L% 75L%
		v ML6p7P: Toyal VIkalr哲yCas i ai B6	<i>1111</i>	_	Dg/b	513	51+	r _G	L% 75L%
E60lab:t vksv8/39 C9 b(₩ b(S3rslor 8) (Col: 1anQ4a4i	Ha4i							
vu 11L058+7L60	Gh 19	v ML6pP: HC toxn e VlkalnEnyCas i ai B6	Mu B 751L7L1	_	Dg/b	Ÿ	, V	ΓΦ	No briD ry
		v ML6p7P: i atroEaye VlkalnEryCas i ai B6	68157657+	~	Dg/b	<u>۸</u>	<u>^</u>	P	No briDny



	•	4
		NA

: 0 of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNU vNTVb vVATH W JVNI vW : 51LLp0 VbXvAT PVAK GVWh BAKW

Wer 7u aytm: Wt SEH						Laboratory Di	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
739	OD b(S3rslor 8) (Col: 1anQ4a4iufoVl3Vced	4a4i uf oVI3/ced							
vu 11L058+7L60	Gh 19	vML6p7P:XmRatroEayeVlkalmEnyCasiaiB6	p173576	1	Dg/b	+8	6+	10	L% 75L%
		v ML6p7P: Toyal VlkalrEyCas i ai B6	шш	-	Dg/b	8+	6+	103	L% 75L%
E60412: pcvsle &cr	E60412: pcvsle &crcdd Nelr Fis PpO4 Au G96t	8 (Col: 1an4A4Q							
vu 11L05+07LL1	VEoED ocs	v ML01G: Welfaye as WB 0 7Tctr n nDeytinR	108L87p978	_	Dg/b	115LL	1L3LL	© +	L% 75L%
vu 11L058L7LL1	VEoECD ocs	v ML01G: Welfaye as WB0 7Tctr n nDeytnR	108L87p978	-	Dg/b	8	8	ΓΦ	No brD ry
E60412: pcvsle &cr	E60412: pcvsle &cr@d3Nelr3fisPpO4 Au@ 61	8 (Col: 1an4AQDi							
v u 11L058+7LL1	Gh 6	v ML01G: Wolfaye as WB0 7Tctr n nDeytnR	108L87p978	-	Dg/b	5LpL	515L	50	L% 75L%
v u 11L058+7L1L	Gh 1+	v ML01G: Wclfaye as WB0 7Tctr n nDeytnR	108L87p978	1	Dg/b	+0	d0	ΓΦ	L% 75L%
E60402: (hvortage 6 Pf rele sVs@Per 8)	Pfrele sVs®Per 8 (Col: 1an4A44i	in4A44i							
v u 11L05+07LL1	VEoECD ocs	v ML03G: i dlotn e	1+88p7LL7+	-	Dg/b	11989	980LL	LG	L% 75L%
v u 11L058L7LL1	VEoECD ocs	v ML03G: i dlotn e	1+88p7LL7+	-	Dg/b	3+	7	⊕	L% 75L%
E60402: (hwr3de 6 3Frele sVsv9Per 8) (Pfrele sVs@Per 8 (Col: 1an4A4Di	IN4A4Di							
vu 11L058+7LL1	Gh 6	v ML03G: i dlotn e	1+88p7LL7+	_	Dg/b	0+	0+	ΓΦ	L% 75L%
vu 11L058+7L1L	Gh 1+	v ML03G: i dlotn e	1+88p7LL7+	-	Dg/b	16	16	ΓŒ	L% 73L%
E60402: (hvor3de 63	E60402: (hvor3de 63Frele sVsv9Per 8) (Col: 1an4AQ4i	in4AQ4i							
vu 11L058+7L51	Gh 05M	v ML03G: i dlotn e	1+88p7LL7+	-	Dg/b	7899	929T	0 00	L% 75L%
v u 11L06L57LL+	VEoECD ocs	v ML03G: i dlotn e	1+88p7LL7+	-	Dg/b	100	1+6	φ	L% 75L%
E60DIF: 63Prowed M	E60D F: 6 관Powed Msjor (sl쇼VP 용 (Col: 1an4A4l i	Ali							
v u 11L05+07LL1	VEoED ocs	v ML96F: i alRcD	p00LねLを	_	Dg/b	089	089	ΓΦ	L% 75L%
		v ML96F: u agEesnD	p06979370	1	Dg/b	191	191	ΓŒ	L% 75L%
		v ML96F: Wb. rcD	p00L75673	_	Dg/b	615LL	615LL	ΓŒ	L% 75L%
		v ML96F: PoyassrcD	p00L7L97p	-	Dg/b	79	79	П	L% 75L%
vu 11L058L7LL1	VEoECD ocs	v ML96F: i alRcD	p00L7pL7s	-	Dg/b	80	80	ΓŒ	L% 75L%
		v ML96F: u agEes⊯D	p06979370	-	Dg/b	19	61	ΓΦ	L% 75L%
		v ML96F: Wb. ncD	p00L75673	-	Dg/b	9+	+5	ΠD	L% 75L%
		v ML96F: PoyassrcD	p00L7L97p	-	Dg/b	5	2	ΓŒ	No brD ry
E60DIF: 63PPowed M	E60D F: 6 ЭРоуеd Msjor (slъvP 8) (Col: 1an4A4mi	Ані							
v u 11L058+7LL1	Gh 6	v ML96F:i alR©D	p00LねLを	_	Dg/b	565	5pp	1p @	L% 75L%
		v ML96F: u agEesrcD	p06979370	_	Dg/b	90	31	1+ D	L% 75L%
		vML96F: W6. 1€D	p00L75673	_	Dg/b	+2	+2	ΓŒ	L% 75L%
		v ML96F: PoyassrcD	₽00L7L97p	-	Dg/b	1+	19	510	L% 73L%
v u 11L058+7L1L	Gh 1+	v ML96F:i alR©D	p00LතLਣ	1	Dg/b	+	+	ΓŒ	No briD ry
		v ML96F: u agEes⊯D	p06979370	1	Dg/b	+	+	ΓŒ	No briD ry
		v ML96F: W6. rcD	p00L75673	1	Dg/b	01	90	30	L% 75L%
		v ML96F: PoyassrcD	₽00L7L97p	-	Dg/b	۵	ď	ΓΦ	No briD ry
E60DIF: 63Powed M	E60DIF: 6 3PPowed Msjor (sl33 VP8) (Col: 1an4AQii	AQ i							
vu 11L058+7L51	Gh 05M	v ML96F: i alR©D	p00LねLを	_	Dg/b	6p3	dd9	ГӨ	L% 75L%
		v ML96F: u agEesrcD	p06979370	_	Dg/b	ф	60d	0 00	L% 75L%
		v ML96F: Wb. rcD	p00L75673	_	Dg/b	503L	56pL	ФФ	L% 75L%
								A Campho	Death or Limited Court



: 3 of 6L : v u 11L058+ VDeE. DeEy1 : v NI JABNU v NTVb v VATH W JV NI vW : 51LLp0 VbXv AT PVAK GVWN BAKW

Page h otk Bt. et

ilmeEy Pto-eRy

Wcr 7u aytnx: Wt SEH						Laboratory D	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
E60DIF: 6 Prowed Misjor (slave 8	$\overline{}$	Col: 1an4AQI i uf oVI3/ced							
v u 11L058+7L51	Gh 05M	v ML96F: PoyassrcD	p00L7L97p	_	Dg/b	51p	553	60	L% 75L%
v u 11L06L57LL+	VEoECD ocs	v ML96F: i alRtD	D00L7pL75	_	Dg/b	80	d	ΓŒ	No briD ry
		v ML96F: u agEesncD	D06979370	_	Dg/b	8	d	ΓΦ	No briD ry
		v ML96F: Wb. IED	p00L75673	_	Dg/b	6L3	5p3	1L®	L% 75L%
		v ML96F: PoyassrcD	D00L7L97p	-	Dg/b	۵	Q.	ΓŒ	No briDry
E2 0A0F: 6 PPowed	E20A0F:63PPowyed MelswP G9 以 buMp 9 (C	Col: 1an4Dn0i							
vu 11L05817LL1	VEoECD ocs	vGL5LVÆ:ia.DncD	6290L700d	L@LL1	Dg/b	<l@ll1< td=""><td><l@ll1< td=""><td>ΓΦ</td><td>No briDry</td></l@ll1<></td></l@ll1<>	<l@ll1< td=""><td>ΓΦ</td><td>No briDry</td></l@ll1<>	ΓΦ	No briDry
		v GL5LV形: VtseEnR	p00L76875	L@L1	Dg/b	<l@l1< td=""><td><l@l1< td=""><td>Ρ̈́</td><td>No briDry</td></l@l1<></td></l@l1<>	<l@l1< td=""><td>Ρ̈́</td><td>No briDry</td></l@l1<>	Ρ̈́	No briDry
		v GL5LVÆ∶i oraly	D00L70870	L@L1	Dg/b	L@15	L@10	0 6	L% 73L%
		v GL5LV形: i o44et	8778770d	L@L1	Dg/b	LDL3	L@L3	ΓΦ	No briDry
		v GL5LVÆ: bea.	p06979571	L@L1	Dg/b	L@L1	L@L5	П	No briDry
		v GL5LV形: u aEgaEese	57+67690d	L@L1	Dg/b	LØ58	TQQT	169	L% 75L%
		v GL5LV形: NMel	D00L7L57L	L@L1	Dg/b	L@Lp	L@L8	100	No briDry
		v GL5LV下: Z佢R	p00L7++7+	L@L3	Dg/b	L@16	L@16	ΓŒ	No briD ry
		v GL5LVF: VIcDnEncD	p05979L73	L@1	Dg/b	L@0	L@+	550	No brD ry
		v GL5LV形: WeleEndD	pp8570975	L@1	Dg/b	<l@1< td=""><td><l@1< td=""><td>ΓŒ</td><td>No briD ry</td></l@1<></td></l@1<>	<l@1< td=""><td>ΓŒ</td><td>No briD ry</td></l@1<>	ΓŒ	No briD ry
		v GL5LV下: XotoE	p00L70578	L@3	Dg/b	<l@3< td=""><td><l@3< td=""><td>ΓŒ</td><td>No brD ry</td></l@3<></td></l@3<>	<l@3< td=""><td>ΓŒ</td><td>No brD ry</td></l@3<>	ΓŒ	No brD ry
		v GL5LVÆ: toE	p0697897+	L@3	Dg/b	L@p	FØ3	53 ©	No briD ry
v u 11L058+7LL9	Gh 13	vGL5LVÆ:ia.DncD	p00L70679	L@LL1	Dg/b	<l@ll1< td=""><td><l@ll1< td=""><td>ΠŪ</td><td>No briD ry</td></l@ll1<></td></l@ll1<>	<l@ll1< td=""><td>ΠŪ</td><td>No briD ry</td></l@ll1<>	ΠŪ	No briD ry
		v GL5LV元: VtseEnR	p00L76875	L@L1	Dg/b	<l@l1< td=""><td><l@l1< td=""><td>ΓŒ</td><td>No brD ry</td></l@l1<></td></l@l1<>	<l@l1< td=""><td>ΓŒ</td><td>No brD ry</td></l@l1<>	ΓŒ	No brD ry
		v GL5LVÆ: i oraly	p00L70870	L@L1	Dg/b	L@L8	L@L8	ΓŒ	No brD ry
		v GL5LVF: i o44et	p00L73L78	L@L1	Dg/b	L@L5	L@L5	ΓŒ	No brD ry
		v GL5LVF: bea.	p06979571	L@L1	Dg/b	L@L1	L@L1	ΓŒ	No briD ry
		v GL5LVÆ: u aEgaEese	52+62690d	L@L1	Dg/b	L@38	ГФ39	ΓΦ	L% 75L%
		v GL5LVTF: NnRkel	D00L757L	L@L1	Dg/b	L@1L	L@1L	ΓŒ	L% 73L%
		v GL5LV下: ZrER	p00L7++7+	L@L3	Dg/b	L@1+	L@1+	ΓΦ	No briDry
		v GL5LV形: VIcDnEncD	p05979L73	L@1	Dg/b	<l@1< td=""><td><l@1< td=""><td>ΓΦ</td><td>No briDry</td></l@1<></td></l@1<>	<l@1< td=""><td>ΓΦ</td><td>No briDry</td></l@1<>	ΓΦ	No briDry
		v GL5LV形: WeleEnd D	pp8570975	L@1	Dg/b	<l@1< td=""><td><l@1< td=""><td>ΓΦ</td><td>No briDry</td></l@1<></td></l@1<>	<l@1< td=""><td>ΓΦ</td><td>No briDry</td></l@1<>	ΓΦ	No briDry
		v GL5LV形: XotoE	p00L70578	L@3	Dg/b	105	1006	16	L% 75L%
		v GL5LV邢: toE	p0697897+	L@3	Dg/b	<l@3< td=""><td><l@3< td=""><td>ΓΦ</td><td>No briD ry</td></l@3<></td></l@3<>	<l@3< td=""><td>ΓΦ</td><td>No briD ry</td></l@3<>	ΓΦ	No briD ry
E2 0A0F: 6 3Prowed	E2 0A0F: 6 3PPowyed Mels vP G9 Ц b uMp 8) (С	Col: 1an4Dn¥i							
v u 11L058+7L5L	Gh 01	vGL5LVÆ:ia.DncD	p00L70679	L@LL1	Dg/b	<l@ll1< td=""><td><l@ll1< td=""><td>ΓŒ</td><td>No briD ry</td></l@ll1<></td></l@ll1<>	<l@ll1< td=""><td>ΓŒ</td><td>No briD ry</td></l@ll1<>	ΓŒ	No briD ry
		v GL5LV形: VtseErR	p00L76875	L@L1	Dg/b	L@10	L@16	ΓŒ	L% 73L%
		v GL5LVÆ∶i oraly	p00L70870	L@L1	Dg/b	L@L1	L@L1	ΓΦ	No briD ry
		v GL5LV7F∶i o44et	D00L73L78	L@L1	Dg/b	L@L1	L@L1	ΓΦ	No briD ry
		v GL5LVF: bea.	p06979571	L@L1	Dg/b	L@L1	<lql1< td=""><td>ГФ</td><td>No briD ry</td></lql1<>	ГФ	No briD ry
		v GL5LV <i>T</i> ∷ u aEgaEese	52+62690d	L@L1	Dg/b	LØ65	L065	ГФ	L% 75L%
		v GL5LV形: Nrikel	p00L7L57L	L@L1	Dg/b	<l@l1< td=""><td>L@L1</td><td>ГФ</td><td>No briD ry</td></l@l1<>	L@L1	ГФ	No briD ry
		v GL5LVF: ZrER	p00L7++7+	L@L3	Dg/b	<l@l3< td=""><td><l@l3< td=""><td>P</td><td>No briD ry</td></l@l3<></td></l@l3<>	<l@l3< td=""><td>P</td><td>No briD ry</td></l@l3<>	P	No briD ry



V.

: VNI ABNU VNTVb VVATH W JVNI VW

vu 11L058+ VDeE. DeEy1

h otk Bt. et

i IneEy Pto-eRy

Recovery Limits (%) No briDny No briDny L% 73L% L% 75L% L% 75L% L% 75L% No briDry No briDry No briDny No briDny No briD ry L% 75L% No briDry No briDry L% 75L% L% 75L% L% 73L% No briD ry L% 75L% No briD ry No briD ry No briD ry No briD ry No briDry No briD ry No briD ry No briDry No briD ry No briDry No briD ry RPD (%) 00 a g 8 9 6 8 9 9 9 g ā ā a 9 9 9 a e 9 9 9 a a a a Laboratory Duplicate (DUP) Repor Original Result Duplicate Result <L@LL1 <LQL1 <LQL1 <L@L1 <L@L3 <L@L1 <L@L1 <L@L1 L@L5 <_0LL1 <L@L1 <L@L1 <L@L1 <L@LL1 <L@L1 <L@L1 <L@3 L@L+ L₀₈₀ <LQL1 <L@3 <L@3 <L@L1 <L0L3 <L@1 L@55 <L@1 <L@1 ГФ0 16**®** LØ6L <L@1 <L@1 LO8 100 L e 6LL <L@LL1 <LOL3 <L@LL1 <L@L1 <L@LL1 <L0L1 <L@L1 <L0L1 <L0L1 <L@L1 <L0L1 <L@L1 <L0L3 66**0**J L_Dp9 <LQL1 <L0L1 <L@L1 <L0L1 <L@3 L_QL1 LØ59 <L@L1 <L@1 <L@3 <L@3 <L@1 <L@1 ГΦр 100 L@51 <L@1 L P <L@1 LOp ^L 01^ 18 679 Dg/b Unit L@LL1 L@L3 L@L3 L@LL1 L@L1 L@L1 L@L1 L@L1 L@L1 L_QL1 L@L1 L@LL1 L@L1 L@L1 L_QL1 L@L1 L_QL1 L@L1 L@L1 L@L1 L@L1 L_QL1 L@L1 L_QL₃ L@3 L@3 Ę L@3 L@ L@3 LOR L P L@1 L@3 L P L@3 L@ L@1 L P p00L76875 p00L76875 p05979L73 p00L7+7+ p00L70679 p00L7+7+ p00L70679 p00L70870 p05979L73 pp8570975 pp8570975 p00L70578 p06978974 p00L70679 p00L70870 p00L73L78 p06979571 p06979+73 p001757 p05979L73 pp8570975 p00L70578 **47687690**d p00L76875 P00L73L78 p06979571 p06979+73 p05979L73 pp8570975 p00L70578 P06978974 P00L73L78 p06979571 p06979+73 p00L7L57L p00L7++74 P001757 v GL5LVÆ: u aEgaEese v GL5LV7T: u aEgaEese v GL5LV7T: u aEgaEese v GL5LV/F: VIcD nEncD v GL5LV7T: VIcD nErcD E20A0F: 6 3PPowed Mels P G9 1(buMp 8) (Col: 1an4 DmAi ufoVI3//ced v GL5LVÆ: VIcD nEncD v GL5LV7T: VIcD nEncD v GL5LV下: WeleEncD vGL5LVÆ:ia.DncD V GL5LVTF: WeleEncD vGL5LV7T:ia.DncD v GL5LV7T: WeleEncD vGL5LV7T: i a. DrcD vGL5LV7T: WeleEncD v GL5LV下: VtseEnR v GL5LV7T: VtseEnR v GL5LV7T: VtseEnR v GL5LVÆ: i or aly vGL5LVÆ:i o44et v GL5LV7T: i or aly v GL5LV7T:i o44et v GL5LV7T: i or aly v GL5LV7T: i o44et Method: Compound v GL5LV下: XotoE v GL5LV下: XotoE v GL5LVT: NrRel v GL5LV7T: NrRkel v GL5LV7T: XotoE v GL5LV7T: NrRkel v GL5LV下: ZrER v GL5LV7T: ZrER v GL5LV7T: ZrER v GL5LV™: toE v GL5LVÆ: 1oE v GL5LV7T: JoE v GL5LV7T: bea. v GL5LVÆ: bea. v GL5LV7T: bea. E2 0A0S: SolsvMelsvP C9 L buMp 8 (Col: 1an4Dnmi Client sample ID VEoECD ocs VEoE@ocs 19 Gh 01 g Laboratory sample ID Nor 7u ayrx: Wt SEH vu 11L058+7L60 vu 11L056p7LL6 v u 11L058p7L6 v u 11L058+7L5L



Page : p of 6L h ofk Bt. et : v u 11L058+ VDeE. DeEy1 i læEy : v NI JABNu v NTVb v VATH W JV NI v W PtoeRy : 51LLp0 VbXv AT PVAK GVWh BAKW

Wer 7u aytıx: Wt SEH						Laboratory D	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
E2 0A0S: SolsvMelsv	E20A0S:SolsvMelsvPG91(buMp8)(Col:1an4DnmiufoVl3Vced	nmi uf oVI3/ced							
vu 11L058p7LL6	VEoE@ocs	v GL5LVTT: XotoE	p00L70578	L@3	Dg/b	<l@3< th=""><th><l@3< th=""><th>ΓŒ</th><th>No briD ry</th></l@3<></th></l@3<>	<l@3< th=""><th>ΓŒ</th><th>No briD ry</th></l@3<>	ΓŒ	No briD ry
		v GL5LVT: toE	p06978974	L@3	Dg/b	<l@3< th=""><th><l@3< th=""><th>۵٦</th><th>No biD ry</th></l@3<></th></l@3<>	<l@3< th=""><th>۵٦</th><th>No biD ry</th></l@3<>	۵٦	No biD ry
E2 01 QF: 6 PPowed N	E2 0 I GF: 6 3PPovyed Merfcr9 G9 FLMp 8) (Col: 1an4 DaDi	In4DaDi							
vu 11L05817LL1	VEoE@ocs	v GL63F: u etRtC	47 d67 690 d	L@LL1	Dg/b	PTTTT	L@LL5	ПП	No briD ry
v u 11L058+7LL9	Gh 13	v GL63F: u etPctC	47 d67 690 d	L@LL1	Dg/b	<l@ll1< th=""><th><l@ll1< th=""><th>a</th><th>No brDry</th></l@ll1<></th></l@ll1<>	<l@ll1< th=""><th>a</th><th>No brDry</th></l@ll1<>	a	No brDry
E2 01 QF: 6 PPowed N	E201 GF: 6 3PPovyed Merfcr9 G9 FLMp 8) (Col: 1an4Dmli	In4DMi							
vu 11L058+7L51	Gh 05M	v GL63F: u etRetC	+7d67690d	L@LL1	Dg/b	L@LL5	L@LL5	a	No brDry
vu 11L058+7L60	Gh 19	v GL63F: u etRetC	₽796979p	L@LL1	Dg/b	<l@ll1< th=""><th><l@ll1< th=""><th>۵٦</th><th>No brDry</th></l@ll1<></th></l@ll1<>	<l@ll1< th=""><th>۵٦</th><th>No brDry</th></l@ll1<>	۵٦	No brDry
E2 01 CS: SolsvHef o	E201 CS: SolsvHef oyers Gre Merf cr9 C9 FLMp 8	8 (Col: 1aa0n11i							
v u 11L056p7LL6	VEoECD ocs	v GL63T: u etRetC	47 d67 69 0d	L@LL1	Dg/b	<l@ll1< th=""><th><l@ll1< th=""><th>۳</th><th>No brD ry</th></l@ll1<></th></l@ll1<>	<l@ll1< th=""><th>۳</th><th>No brD ry</th></l@ll1<>	۳	No brD ry
vu 11L058+7L61	A.WWTv 70	v GL63T: u etRctC	47 d67 690 d	L@LL1	Dg/b	<l@ll1< th=""><th><l@ll1< th=""><th>ΓŒ</th><th>No briDry</th></l@ll1<></th></l@ll1<>	<l@ll1< th=""><th>ΓŒ</th><th>No briDry</th></l@ll1<>	ΓŒ	No briDry
E2 0QDF: 6 3Proyed 5	5 exsysteVI (hroN&N 8) (C	Col: 1anmm#i							
vu 11L05867L56	VEoECD ocs	v GL3LF: HexamaleEyi dtoDncD	1830L75979	L@1	Dg/b	<l@1< th=""><th><l@1< th=""><th>e H</th><th>No brDry</th></l@1<></th></l@1<>	<l@1< th=""><th>e H</th><th>No brDry</th></l@1<>	e H	No brDry
vu 11L058+7LL8	Gh 10	v GL3LF: HexamaleEyi dtoDncD	1830L75979	L@1	Dg/b	<l@1< td=""><td><l@1< td=""><td>۵٦</td><td>No brD ry</td></l@1<></td></l@1<>	<l@1< td=""><td>۵٦</td><td>No brD ry</td></l@1<>	۵٦	No brD ry
E20QDF: 6 PPowed 5	E20QDF: 6 ${f 3}$ Powyed ${f 5}$ exsysteVI (${f hron} {f 3} {f N} {f 8}$ (${f C}$	Col: 1anmnh i							
vu 11L058+7L19	Gh 0L	v GL3LF: HexamaleEyi dtoDncD	1830L75979	L@1	Dg/b	<l@1< td=""><td><l@1< td=""><td>a</td><td>No brDry</td></l@1<></td></l@1<>	<l@1< td=""><td>a</td><td>No brDry</td></l@1<>	a	No brDry
vu 11L058+7L58	МРЬЛО	v GL3LF: HexamaleEyi dtoDncD	1830L75979	L@1	Dg/b	<l@1< td=""><td><l@1< td=""><td>ΓŒ</td><td>No briDry</td></l@1<></td></l@1<>	<l@1< td=""><td>ΓŒ</td><td>No briDry</td></l@1<>	ΓŒ	No briDry
EK0AC2: Free f 9sV3c	EKOAC2: Free f 9sV3de C9 6 3Pf rele t Vsv9Per 8) (Col: 1anna Qni							
v u 11L019L7LL3	VEoE@ocs	vKL53G: Ftee i Ca臣n e	шш	L@L0	Dg/b	<l@l0< td=""><td><l@l0< td=""><td>ΓΦ</td><td>No briD ry</td></l@l0<></td></l@l0<>	<l@l0< td=""><td>ΓΦ</td><td>No briD ry</td></l@l0<>	ΓΦ	No briD ry
vu 11L058+7LL1	Gh 6	v KL53G: Ftee i CaEn e	11111	L@L0	Dg/b	L@L3	L@L0	۳	No biD ry
EK0AC2: Free f9sV3	EKOAC2: Free f 9sV3de C9 6 3Pfrele t Vsv9Per 8) (Col: 1anna CDi							
vu 11L058+7L15	Gh 55	v KL53G: Ftee i Ca臣n e	шш	L@L0	Dg/b	<l@l0< th=""><th><l@l0< th=""><th>ΓΦ</th><th>No briDry</th></l@l0<></th></l@l0<>	<l@l0< th=""><th>ΓΦ</th><th>No briDry</th></l@l0<>	ΓΦ	No briDry
vu 11L058+7L51	Gh 05M	v KL53G: Ftee i CaEn e	11111	L@L0	Dg/b	L@16	L@1p	55 ®	No biDry
EK0AC2: Free f 9sV3	EKOAQ2: Free f9sV3de G9 6 3Pfrele tVsv9Per 8) (Col: 1anman0i	Col: 1annan0i							
vu 11L058+7L63	MUPO	v KL53G: Ftee i CaEn e	11111	L@L0	Dg/b	L@1+	L@1p	۳٦	No brD ry
vu 11L06L67LL8	VEoE@ocs	v KL53G: Ftee i CaEn e	шш	L@L0	Dg/b	<l@l0< th=""><th><l@l0< th=""><th>ΓΦ</th><th>No brD ry</th></l@l0<></th></l@l0<>	<l@l0< th=""><th>ΓΦ</th><th>No brD ry</th></l@l0<>	ΓΦ	No brD ry
EK0An2: Solsv(9sV;	EK0An2 : Solsv(9sV3de B9 6 3Pfrele t Vsv9Per 🐧 ((Col: 1anman1i							
vu 11L058+7LL1	Gh 6	v KL5+G: Toyal i GaEn e	3p71573	L@L0	Dg/b	L@pL	L@+9	ΓΦ	L% 73L%
vu 11L058+7L1L	Gh 1+	v KL5+G: Toyal i GaEn e	3p71573	L@L0	Dg/b	<l@l0< th=""><th><l@l0< th=""><th>۳</th><th>No biD ry</th></l@l0<></th></l@l0<>	<l@l0< th=""><th>۳</th><th>No biD ry</th></l@l0<>	۳	No biD ry
EK0An2: Solsv(9sV;	EK0An2: Solsv(9sVade B96 Pfrelet Vsv9Per 8)	(Col: 1anmanAi							
vu 11L058+7L51	Gh 05M	v KL5+G: Toyal i CaEn e	3p71573	L@L0	Dg/b	09 0 7	L 0 85	1L®	L% 75L%
vu 11L058+7L61	ANWTV D	v KL5+G: Toyal i GaEn e	3p71573	L@L0	Dg/b	<l@l0< th=""><th><l@l0< th=""><th>ΓΦ</th><th>No briD ry</th></l@l0<></th></l@l0<>	<l@l0< th=""><th>ΓΦ</th><th>No briD ry</th></l@l0<>	ΓΦ	No briD ry
EK0Am2: Wesktf3d	6 PPof 360e (9svale B96 P	EK OAm2: Wesk tf al 6 3 P P of 3s Ge (9s Vale B9 6 3 f rele tVs v9 Per 8) (Col: 1 ann an li							
vu 11L058+7LL1	Gh 6	v KL58G: h eak VRn MrssoRaarle i CaEn e	шш	L@L0	Dg/b	6707	L@L9	ΓΦ	No briD ry
vu 11L058+7L1L	Gh 1+	v KL58G: h eak VRn MassoRaarle i CaEn e	11111	L@L0	Dg/b	<l@l0< th=""><th><l@l0< th=""><th>۵٦</th><th>No briD ry</th></l@l0<></th></l@l0<>	<l@l0< th=""><th>۵٦</th><th>No briD ry</th></l@l0<>	۵٦	No briD ry
t fæ	ဖ	frele t Vsv9Per 8) (Col: 1annan4i							
vu 11L058+7L51	Gh 05M	v KL58G: h eak VRn MrssoRarle i CaEn e	шш	L@L0	Dg/b	L@00	L@33	510	L% 73L%
vu 11L058+7L61	AJWWTV 70	v KL58G: h eak VRn MassoRarle i CaEn e	<i>11111</i>	L@L0	Dg/b	<l@l0< td=""><td><l@l0< td=""><td>O_</td><td>No briDry</td></l@l0<></td></l@l0<>	<l@l0< td=""><td>O_</td><td>No briDry</td></l@l0<>	O_	No briDry



<		9	(ALS)	

: 8 of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNu vNTVb vVATH W Jr Ni vW : 51LLp0 VbXvAT PVAK GVWh BAKW

Wcr 7u aytrx: Wt SEH		-				Laboratory D	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK040b: Fvcor3de 0	EK040b: Fvcortde @ b(Strslor 8) (Col: 1anQ4nD	Andi							
v u 11L05L97LL1	VEoE@ocs	v KLOLP: Flcotn e	1+98070878	ΓO	Dg/b	L@	ΓŒ	ГФ	No briD ry
vu 11L05867L56	VEoE@ ocs	v KLOLP: Flcotn e	1+98070878	ΓQ	Dg/b	<٦0	<pre></pre>	ФЛ	No briD ry
å	Geb (S3rslor 8) (Col: 1anQ4ali	¥al i							
v u 11L058+7LL9	Gh 13	v KL0LP: Flcotn e	1+98070878	ΓQ	Dg/b	%T>	<l0< th=""><th>ПΩ</th><th>No briD ry</th></l0<>	ПΩ	No briD ry
vu 11L058+7L18	Gh 69	v KLOLP: Flcotn e	1+98070878	ΓQ	Dg/b	10	10	П	L% 73L%
EK040b: Fvcor3de (EK040b: Fvcor3de	¥aQ							
vu 11L058+7L60	Gh 19	v KL0LP: Flcotn e	1+98070878	ΓQ	Dg/b	ГО	Ю	ВJ	No briD ry
EKOCA2: R3r3e sP	EKOCA2: R3r3esPR C96 Ffrelet Vsv9Per 9 (Col: 1an4A41i							
v u 11L05097LL1	VEoECDocs	v KL3pG: Nytrye as N	Ш.	L@1	Dg/b	L @ 0	L@3	ΠŪ	%75L%
v u 11L058L7LL1	VEoECDocs	v KL3pG: Nytrye as N	Ш.	L@1	Dg/b	<l@1< th=""><th><l@1< th=""><th>ΠŪ</th><th>No briD ry</th></l@1<></th></l@1<>	<l@1< th=""><th>ΠŪ</th><th>No briD ry</th></l@1<>	ΠŪ	No briD ry
EK00a2: R3r3e sP	sPR 396 Frelet Vs 49 Per 9 (Col: 1an4A4ai							
v u 11L058+7LL1	Gh 6	v KL3pG: Nntne as N	шш	L@1	Dg/b	<l@1< th=""><th><l@1< th=""><th>П</th><th>No briD ry</th></l@1<></th></l@1<>	<l@1< th=""><th>П</th><th>No briD ry</th></l@1<>	П	No briD ry
v u 11L058+7L1L	Gh 1+	v KL3pG: Nnjtnje as N	<i>1111</i>	L@1	Dg/b	<l@1< th=""><th><l@1< th=""><th>В</th><th>No briD ry</th></l@1<></th></l@1<>	<l@1< th=""><th>В</th><th>No briD ry</th></l@1<>	В	No briD ry
EKOCA2: R3r3esP	EKOCa2: R3r3esPR C96 SPfrelet Vsv9Per 8) (Col: 1an4ACA	Col: 1an4AQAi							
vu 11L058+7L51	Gh 05M	v KL3pG: Nytrye as N	Ш.	L@1	Dg/b	L@5	L@5	ΤО	No briD ry
v u 11L06L57LL+	VEoECD ocs	v KL3pG: Nntine as N	шш	L@1	Dg/b	Г Ф+	+⊕T	В	L% 75L%
EK0CD2: R3r3e 7v	EKOCO2: R3r3e 7 vc PR3rsle s PR 8ROxi 639 63P	CB 6 Terfet Vsv9Per 8) (Col: 1anDmmi							
v u 11L050+7LL1	VEoECD ocs	v KL39G: Nnytnye w Nnytaye as N	1111	L@1	Dg/b	<l@1< th=""><th><l@1< th=""><th>T_O</th><th>No briD ry</th></l@1<></th></l@1<>	<l@1< th=""><th>T_O</th><th>No briD ry</th></l@1<>	T _O	No briD ry
v u 11L058+7LL9	Gh 13	v KL39G: Nnythe w Nnytaye as N	<i>1111</i>	L@1	Dg/b	L@+	L@p	1+0	No briD ry
EK0CD2: R3r3e 7v	7 cc PR3 rsle sPR 8ROxi 036 5P	6 Pfrele t Vsv9Per 8) (Col: 1anDmmi							
v u 11L058+7L5L	Gh 01	v KL39G: Nntrne w Nntane as N	ш	L@1	Dg/b	FØ3	LOL	ГФ	L% 73L%
vu 11L058+7L60	Gh 19	v KL39G: Nntine w Nntaye as N	<i>1111</i>	L@1	Dg/b	+Q7	LOp	ΘJ	L% 73L%
EK0a12: Hesf13ye	bhoP7horcPsPb Good 9Pfrel	EK0a12 : Hesf13/e bhoP7horcPsPb							
v u 11L058+7LL1	Gh 6	v KLp1G: AeaRymme Pdos4dotcs as P	<i>1111</i>	L@1	Dg/b	<l@1< th=""><th><l@1< th=""><th>ПΩ</th><th>No briD ry</th></l@1<></th></l@1<>	<l@1< th=""><th>ПΩ</th><th>No briD ry</th></l@1<>	ПΩ	No briD ry
v u 11L058+7L1L	Gh 1+	v KLp1G: AeaRymme Pdos4dotcs as P	<i>1111</i>	L@1	Dg/b	<l@1< th=""><th><l@1< th=""><th>ГФ</th><th>No briD ry</th></l@1<></th></l@1<>	<l@1< th=""><th>ГФ</th><th>No briD ry</th></l@1<>	ГФ	No briD ry
EK0a12: Hesf13ye	bhoP7horcPsPb 😪 d3Pfrel	EK0a12: Hesfl3ye bhoP7horcPsPb G9 d3Pfrele sVsv9Per 9 (Col: 1an4AQli							
v u 11L058+7L51	Gh 05M	v KLp1G: AeaRymme Pdos4dotcs as P	ш	L@1	Dg/b	<l@1< th=""><th><l@1< th=""><th>ГФ</th><th>No briD ry</th></l@1<></th></l@1<>	<l@1< th=""><th>ГФ</th><th>No briD ry</th></l@1<>	ГФ	No briD ry
v u 11L06L57LL+	VEoE@ ocs	v KLp1G: AeaRymme Pdos4dotcs as P	<i>1111</i>	L@1	Dg/b	308	3 @ 8	ГФ	%15L%
EK0nQM: pcv3de sPpAu 8) (PpAu 8 (Col: 1an4QA1i								
v u 11L05197LL5	VEoE@ocs	v KL83: Wolfin e as W67	1809+75378	ΓQ	Dg/b	<l0< th=""><th><l0< th=""><th>ГФ</th><th>No briD ry</th></l0<></th></l0<>	<l0< th=""><th>ГФ</th><th>No briD ry</th></l0<>	ГФ	No briD ry
v u 11L058+7LLp	Gh 16	v KL83: Wolfn e as W57	1809+75378	ΓQ	Dg/b	<٦0 <	©7>	ΓŒ	No briD ry
EKOnQM: pcv3de s	EK0mCM: pcv-3desPpAu8) (Col:1an4C)AAi								
vu 11L058+7L18	Gh 69	v KL83: Wolfn e as W57	1809+75378	ΓQ	Dg/b	<٦0	<lo< th=""><th>ГФ</th><th>No briD ry</th></lo<>	ГФ	No briD ry
vu 11L058+7L5p	WPbJT6	v KL83: Wtlfn e as W57	1809+75378	ΓQ	Dg/b	<٦0	<pre></pre>	Ф	No briD ry
Eb0a4t: MoVof9f &	# t roNsI 59drofsrGoVP 8	8 (Col: 1anDIDIi							
v u 11L058+7LLp	Gh 16	∨ PLp0: W¢αeEe	11170573	ဗ	q/bn	83	8	ГФ	No briDny
		v PLp0: 3co4to4 dr eE@Ee	9878578	က	q/bn	8	γ,	- LA	No briDny
		v PLp0: E7Pto4Gr eE@Ee	1167+371	က	q/brl	93	ς,	e e	No briDny



: 9 of 6L : v u 11L058+ VDeE. DeEy1 : v NI JABNU vNTVb vVATH W JvNi vW : 51LLp0 VbXvAT PVAK GVWh BAKW

Page h otk Bt. et

ilmeEy Pto⊷eRy

Accounting a book of the control o	Wcr 7u aytrx: Wt SEH						Laboratory L	Laboratory Duplicate (DUP) Report		
Cost and Discussion Light-ying 4	Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
OpyGrie Geglee 118778 3 µghb <3 µgh <3 µgh <th< td=""><td>Eb0a4t: MoVof9f</td><th>troNsi 59drofsrGoVP</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	Eb0a4t: MoVof9f	troNsi 59drofsrGoVP								
Progresse 1973-83 3 µghb <3 µgh <3<	v u 11L058+7LLp	Gh 16	v PLp0: 1@G7TtmDeydGreE@Ee	1L874p78	က	q/brl	8	۲3	۳	No briD ry
Conjugation (Conjugation (Conjugat			v PLp0: seRXcydreE@Ee	16379878	က	q/brl	8	83	e T	No briD ry
CFG@EE 998.14.74 3 μg/b <3 LQ CHOCKEE 110.7825 3 μg/b <3 LQ FEGRE 110.7825 3 μg/b <3 LQ FEGRE 110.7827 3 μg/b <3 LQ FEGRE 110.7827 3 μg/b <3 LQ FEGRE 110.7877 3 μg/b <3 LQ FEGRE 110.7877 3 μg/b <3 LQ DepOrt FEGRE 110.7877 3 μg/b <3 LQ DepOrt FEGRE 110.7877 3 μg/b <3 LQ FEGRE 110.7877 3			v PLp0: 1@@77tnDeydGreE@Ee	937+67+	က	q/brl	8	8	П	No briD ry
Opticeles Opticeles 0988/h 3 µg/b <3 LO Regise LLO7318 3 µg/b <3 LO poydrefige LLO7318 3 µg/b <3 CO LO regise 11L7051 3 µg/b <3 CO LO regise 11L7051 3 µg/b <3 LO CO regise 11L7051 3 µg/b <3 LO CO regise 11L7051 3 µg/b <3 LO CO LO regise 11L7051 3 µg/b <3 CO LO CO LO regise 11L7051 3 µg/b <3 CO CO LO			v PLp0: yetyXcydr eE@Ee	987.47+	က	q/brl	85	83	ΡΠ	No briD ry
EGGE 1107318 3 µghb <3 10 FeeGere 1107318 3 µghb <3 10 FeeGere 1107318 3 µghb <3 10 FeeGere 1167737 3 µghb <3 10 PeeGere 1167738 3 µghb <3 10 Deydro eigere 1937877 3 µghb <3 10 Deydro eigere 1937877 3 µghb <3 <10 Feegere 1107318 3			v PLp0: 47so4to40yolceEe	+2d&266	က	q/brl	8	8	П	No briDry
11,705,20 3 19,04 <3 <4 <4 <4 <4 <4 <4 <			v PLp0: E7XcyGreE@BE	11073178	က	q/brl	°°	8	ΠΠ	No briD ry
	vu 11L058+7L11	Gh 51	v PLp0: WCeEe	1LL70573	က	q/brl	°°	8	ΠΠ	No briD ry
reg@te 116737 3 µg/b <3 10 DeyCh et@te 116786 3 µg/b <3 10 DeyCh et@te 163786 3 µg/b <3 10 DeyCh et@te 937677 3 µg/b <3 <3 10 DeyCh et@te 937677 3 µg/b <3 <3 10 TreE@te 937677 3 µg/b <3 <3 10 AQVICEE 937677 3 µg/b <3 <3 10 Perf@te 116777 3 µg/b <3 <3 10 Perf@te 116777 3 µg/b <3 <3 10 Perf@te 116777 3 µg/b <3 <3 10 Perf@te 2 10 <3 <3 10 <3 10 Perf@te 3 µg/b <3 <3 10 <3 10 Perf@te <td></td> <th></th> <td>v PLp0: 3co4to4GreE@Ee</td> <td>9878578</td> <td>က</td> <td>q/grl</td> <td>°,</td> <td>8</td> <td>ΓΦ</td> <td>No briDry</td>			v PLp0: 3co4to4GreE@Ee	9878578	က	q/grl	°,	8	ΓΦ	No briDry
Depfore@EE 1187p8 3 µg/b <3 10 Depfore@EE 1188k8 3 µg/b <3			v PLp0: E7Pto4GreE@Ee	1L67+371	3	q/grl	\$	8	ΠΠ	No briD ry
Tree@ee 163786R 3 1µ0h <3 1 µ0h <			v PLp0: 1@G7TtnDeydOreE@Ee	1L87+p78	က	q/brl	85	8	П	No briD ry
Depfore@Ee 93 AG74 3 μg/b <3 <10 Tref@Ee 98 BG74 3 μg/b <3 <3 LQ AdyloceEe 110 73 TR 3 μg/b <3 <3 LQ Ef@Ee 111 705 TR 3 μg/b <3 <3 LQ Fef@Ee 112 705 TR 3 μg/b <3 <3 LQ Fef@Ee 116 75 TR 3 μg/b <3 <3 LQ Depfore E@Ee 116 75 TR 3 μg/b <3 <3 LQ Depfore E@Ee 116 75 TR 3 μg/b <3 <3 LQ Depfore E@Ee 116 75 TR 3 μg/b <3 <3 LQ Depfore E@Ee 116 75 TR 3 μg/b <3 <3 LQ Depfore E@Ee 116 75 TR 3 μg/b <3 <3 LQ Depfore E@Ee 116 75 TR 3 μg/b <3 <3			v PLp0: seR7XcyGreE@6E	16379878	က	q/brl	°23	8	П	No briD ry
Iner@e 987474 3 µg/b <3 4.0 AdyloceEe 987674 3 µg/b <3 <4 LQ EE@E 110.03178 3 µg/b <3 <3 LQ Iner@e 111.0573 3 µg/b <3 <3 LQ Iner@e 116.7437 3 µg/b <3 <4 LQ Iner@e 116.7437 3 µg/b <3 <4 LQ Iner@e 116.7437 3 µg/b <3 <4 LQ Iner@e 116.747 3 µg/b <3 <4 LQ Iner@e <td></td> <th></th> <td>v PLp0: 1₲₡₮tinDeydGreE@Ee</td> <td>937467+</td> <td>က</td> <td>q/6rl</td> <td>°°</td> <td>8</td> <td>ΠΠ</td> <td>No briD ry</td>			v PLp0: 1₲₡₮tinDeydGreE@Ee	937467+	က	q/6rl	°°	8	ΠΠ	No briD ry
OppoliceEe 9980p* 3 µg/b <3 LQ Re@Ee 1107318 3 µg/b <3 LQ Pre@Ee 988578 3 µg/b <3 LQ Pre@Ee 1167473 3 µg/b <3 LQ Pre@Ee 1167473 3 µg/b <3 LQ Pre@Ee 1167473 3 µg/b <3 LQ Deyd/oreEge 1167473 3 µg/b <3 LQ Deyd/oreEge 98747 3 µg/b <3 LQ Pre@Ee 1167478 3 µg/b <3 LQ Pre@Ee 116747 3 µg/b <3 LQ Pre@Ee 116747 3 µg/b <3 LQ Pre@Ee 116747 <3 µg/b <3 LQ Pre@Ee 116747 <3 µg/b <3 LQ Pre@Ee 11674 <3 LQ			v PLp0: yetyXcyGr eE@Ee	987.47+	က	q/6rl	°°	8	ΠΠ	No briD ry
1,073,18 3 1,97b <3 <3 1,07b 1,073,18 3 1,97b <3 <3 <3 <4 <4 <4 <4 <4			v PLp0: 47so4to40yolceEe	+2d&266	က	q/brl	8	8	П	No briDry
111,757 3 1996 <3 <3 100			v PLp0: E7XcyGreE@BE	1L073178	က	q/6rl	85	83	۵٦	No briD ry
POT. WIGNEE POT. WIGNEE - 1 LL 70572 3 µg/b <3 LQ POT. BANGTOGLEGGEE 11 EPAPR 3 µg/b <3	Eb0a4t: MoVof9f	t roNsi3 59drofsrGoVP	8 (Col: 1anDIDQ							
p0: Exolicid Cree@ee p0: Exolicid Cree@ee 16 Print Print Print Print Register 16 Print Print Print Register 16 Print Print Print Register 16 Print Print Register 16 Print	vu 11L058+7L51	Gh 05M	v PLp0: WGeEe	1LL70573	က	q/brl	8	8	ПП	No briD ry
p0: EPPtodOreE@Ee 116 Ph 37 h 3 hg/b <3 <10 p0: 1@GOTftDeyGOreE@Ee 118 Ph 78 h 3 hg/b <3			v PLp0: 3so4to40reE@Ee	9878578	က	q/brl	85	8	П	No briD ry
p0: 1@g7TriDeydTet@Ee 11.8 Pp78 3 µg/b <3 LQ p0: 1@g7TriDeydTret@Ee 163.8878 3 µg/b <3 LQ p0: 1@g7TriDeydTret@Ee 93.767+ 3 µg/b <3 LQ p0: 1@g7TriDeydTret@Ee 98.747+ 3 µg/b <3 LQ p0: 47.8ed404DjccEe 11.073.78 3 µg/b <3 LQ p0: EXcyGTret@Ee 11.073.78 3 µg/b <3 <10 p0: EXcyGTret@Ee 11.073.78 3 µg/b <3 <10 p0: EXcyGTret@Ee 11.073.78 3 µg/b <3 <10 p0: EXcyGTret@Ee 11.877.78 3 µg/b <3 <10 p0: EXcyGTret@Ee 93.767.4 3 µg/b <3 <10 p0: EXcyGTret@Ee 93.767.4 3 µg/b <3 <10 p0: EXcyGTret@Ee 93.767.4 3 µg/b <3 <3 <10 p0: EXcyGTret@Ee 11.073.78 <td></td> <th></th> <td>v PLp0: E7Pto4GreE@Ee</td> <td>1L67+371</td> <td>က</td> <td>q/brl</td> <td>85</td> <td>8</td> <td>П</td> <td>No briD ry</td>			v PLp0: E7Pto4GreE@Ee	1L67+371	က	q/brl	85	8	П	No briD ry
p0: sePXXcyOr EGBEb 16378878 3 µg/b <3 LQ p0: 1GBQT/RtiDeydGr EG@Eb 9374674 3 µg/b <3			v PLp0: 1@G77tnDeydGreE@Ee	1L87+p78	က	q/brl	85	8	П	No briD ry
p. i i i i i i i i i i i i i i i i i i i			v PLp0: seRXcyGreE@Ee	16379878	က	q/brl	8	8	П	No briDry
p0: yet/XXc/GreG@E 98.74-7h 3 µg/b <3 <3 LQ p0: 47Xc4rdc40yolceEe 10.7318 3 µg/b <3			v PLp0: 1@@7TtnDeydGreE@Ee	937467+	က	q/6rl	8,	8	ΠΠ	No briD ry
p0: EXCQUEGEE 9978p74 3 µg/b <3 <3 LQ p0: EXCQUEGEE 11.073178 3 µg/b <3			v PLp0: yetyXcyGreE@Ee	987.47+	က	q/brl	°°	8	ΠΠ	No briD ry
po: EXC, OT ce Ge Each 1L D/37 is pointed EG Each 1L D/37 is pugh <3 <3 L Q po: WQ ce Each College Each Coll			v PLp0: 47so4to40yolceEe	+Zd&Z66	က	q/brl	8,	8	П	No briD ry
p0: WQEE 11L 70573 3 µg/b <3 <3 LQ p0: LSO410-QGEE 98 78578 3 µg/b <3			v PLp0: E7XcyGreE@BE	1L073178	က	q/brl	8	8	П	No briDry
p0: bodtod of e @Be 98 78 578 3 µg/b <3 <3 LQ p0: EPtod of e @Be 1L6 73 77 3 µg/b <3	vu 11L058+7L61	A.NWVTv D	v PLp0: Wice Ee	1LL70573	က	q/brl	8	8	П	No briD ry
po: EProd of eE@e 11.67+371 3 µg/b <3 <10 po: 10.03T+t0-eydr eE@e 11.87+p/R 3 µg/b <3			v PLp0: 3so4to40reE@Ee	9878578	က	q/brl	85	8	П	No briD ry
p0: 1@G7TtfDeydGreE@Ee 1L87PpR 3 µg/b <3 <3 LQ p0: seRXxcyGreE@Ee 163788R 3 µg/b <3 <3 LQ p0: 1GG/TtfDeyGreE@Ee 937-67+ 3 µg/b <3 <3 LQ p0: yet/XcyGreE@Ee 987-74- 3 µg/b <3 <3 LQ p0: yet/XcyGreE@Ee 997-74- 3 µg/b <3 LQ p0: TxCotGreE@Ee 997-74- 3 µg/b <3 LQ p0: TxCotGreE@Ee 1L87.37 3L µg/b <3L LQ p0: TxCotGreE@Ee 1L87.47 3L µg/b <3L LQ p0: 5XcyBeDe(u v K) p878678 3L µg/b <3L LQ p0: 5XcyBeDe(u v K) p878678 3L µg/b <3L LQ p0: 5XcxBeDe(u v K) 1L87L7 3L µg/b <3L LQ p0: 5XcxBeDe(u v K) 1L87L8 3L µg/b <3L LQ			v PLp0: E7Pto4GreE@Ee	1L67+371	က	q/brl	8	8	В	No briD ry
p0: seRXxcyOreE@Ee 163788RB 3 µg/b <3 <3 LQ p0: 13GO/TtdDeyIdreE@Ee 937-67+ 3 µg/b <3			v PLp0: 1@G77tnDeydGreE@Ee	1L87+p78	က	q/brl	8	8	П	No briD ry
p0: 1@07ItD ey/dr eE@Ee 937-67+ 3 µg/b <3 <3 L0 p0: yet/XcvGr eE@Ee 987.47+ 3 µg/b <3			v PLp0: seRXc)dreE@Ee	16379878	က	q/brl	8	8	П	No briD ry
p0: yet/McyCrdeE@Ee 98.1.+7- 98.1.+7- 3 19g/b <3 <3 L0 p0: 47&b04to4ClycleEe 99/Rp7+ 3 19g/b <3			v PLp0: 1680/TtmDeydGreE@BEe	937+67+	က	q/6rl	°°	8	П П	No briD ry
p0: 47bo4to4OlyolceEe 99/8p74 3 µg/b <3 <3 LQ p0: E7xcydreE@Ee 1L073178 3 µg/b <3			v PLp0: yetyĭXcyGr eE@Ee	987.47+	က	q/brl	8	8	e T	No briD ry
p0: EXcydreE@E 1L073178 3 µg/b <3 LQ p0: 1 rEQ VPB/yBC 1L87.370 3L µg/b <3L			v PLp0: 47so4to40yolceEe	+2d&266	က	q/brl	8	8	П	No briD ry
p0: 1 rEd VReyaye 1L87L370 3L µg/b <3L LQ p0: 5 XcyaEoEe (u v K) p878676 3L µg/b <3L			v PLp0: EXcydreE@Ee	1L073178	က	q/brl	8	8	П	No briD ry
p0: 1 FEO VPeyage 1L8R.37D 3L µg/b <3L LQ p0: 57XcyaEoEe (u v K) p878678 3L µg/b <3L	Eb0a4B: Ox9geVsle	d (oN 7ocVdP 8 (Col: 1a	прири							
DEB (U, DKK) 1L871L7I 3L µg/b <3L <3L L@) 3917p87+ 3L µg/b <3L	vu 11L058+7LLp	Gh 16	v PLp0: I rEd V Reyaye	11871370	3F	q/6rl	<3L	<3L	۵٦	No briD ry
DEE (u JKK) 1L871L71 3L µg/b <3L <3L L@) 3917p874 3L µg/b <3L			v PLp0: 57XcyaEoEe (u v K)	p879676	3F	q/brl	<3L	<3L	- T	No briD ry
3917p87+ 3L µg/b <3L <3L L@			v PLp0: 07u eydG石对eEyaEoEe (u 从K)	11871171	3F	q/brl	<3L	<3L	Ф	No briD ry
			v PLp0: 57HexaEoEe (u XK)	39176874	3F	q/brl	<3L	<3L	П	No briD ry



Page h otk Bt. et ilneEy Pto-eRy

: 1L of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNU vNTVb vVATH W JVNI vW : 51LLp0 VbXvAT PVAK GVWh BAKW

Wer 7u aytm: Wt SEH						Laboratory D	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Eb0a4B: Ox9geVsled	Eb0a4B: Ox9geVsled (oN 7ocVdP 8) (Col: 1anD1D1i uf oVI3Vced	lanD1D1i uf oVI3/ced							
v u 11L058+7L11	Gh 51	v PLp0:1 rEG VReyaye	11871370	3F	q/brl	<3F	<3L	۳	No biD ry
		v PLp0: 5双cyaEoEe (u v K)	p879676	3Г	q/bn	<3L	<3L	ΓΦ	No briDry
		v PLp0: 0礼 eyd7574e与gEoEe (u XK)	1L871L71	3L	q/brl	<3L	<3L	ΓŒ	No briD ry
		v PLp0: 57HexaEoEe (u XK)	39176874	3L	q/brl	<3L	<3L	ΓŒ	No brD ry
Eb0a4B: Ox9geVsled (oN 7ocVdP 8) (Col: 1anD/IDQ							
vu 11L058+7L51	Gh 05M	v PLp0: InEd VReyaye	11871370	3F	q/brl	<3L	<3L	П	No brDry
		v PLp0: 57XcyaEoEe (u v K)	p879676	3F	q/brl	<3L	<3L	ГФ	No brDry
		v PLp0: 07u eyd 07574e Eya Eo Ee (u ЖК)	1L871L71	3.	q/brl	<3L	<3L	П	No brD ry
		v PLp0: 57HexaEoEe (u XK)	3917687+	3F	q/brl	<3L	<3L	П	No brDry
vu 11L058+7L61	A.WWTv 70	v PLp0: I rEd VReyaye	11871370	3.	q/brl	<3L	<3L	П	No brD ry
		v PLp0: 57XcyaEoEe (u v K)	p879676	3F	q/brl	<3L	<3L	П	No brDry
		v PLp0: 0礼 eydG石对eEyaEoEe (u 从K)	1L871L71	3F	q/brl	<3L	<3L	П	No brDry
		v PLp0: 57HexaEoEe (u XK)	39176874	3F	q/brl	<3L	<3L	Π	No briDry
Eb0a4(:pcvoVsled	Eb0a4(:pcvoVsled(oN7ocVdP8)(Col:1anD1Dli	and Di i							
vu 11L058+7LLp	Gh 16	v PLp0:i atroE.rsclfn e	p37137L	3	q/brl	33	°23	П	No brDry
vu 11L058+7L11	Gh 51	v PLp0:i atro E. nsclfn e	p37137L	က	q/brl	×3	8	ПФ	No briDry
Eb0a4(:pcvoVsled	(oN 7 oc VdP 8) (Col: 1anDIDG	and Doi							
vu 11L058+7L51	Gh 05M	v PLp0:i atro E. nsclfn e	p37137L	3	q/brl	°23	ς,	ΓΦ	No briD ry
vu 11L058+7L61	AJVW/Tv 70	v PLp0:i atr oE. rsclfn e	p37137L	3	q/brl	8	ςς>	ΓΦ	No briD ry
Eb0a46: FcN 3gsVIP 8 (Col: 1anDIDI	8 (Col: 1anDIDIi								
v u 11L058+7LLp	Gh 16	v PLp0: 5@7Mmdloto4to4aEe	39025170	3	q/brl	<3	ς>	ΓŒ	No briD ry
		v PLp0: 1偽MMdloto4to4aEe	p878p73	3	q/brl	8	\$	ΠŪ	No briD ry
		v PLp0: Rs对GMMdloto4to4GeEe	1LL+17L13	3	q/brl	<3	<3	ΠŪ	No briD ry
		v PLp0: ytaEs对@Mindloto4to4GeEe	1LL+17L57+	က	q/brl	×3	8	ΠΠ	No brDry
		v PLp0: 167Mm toDoeydaEe (v MX)	1L+79670	က	q/brl	8	8	ΓŒ	No briDry
vu 11L058+7L11	Gh 51	v PLp0: 5@7Mmdloto4to4aEe	39025170	က	q/brl	°2	8	ΓŒ	No briDry
		v PLp0: 1637/MRdloto4to4aEe	p878p73	က	q/brl	8	8	ΓŒ	No briDry
		v PLp0: Rs对GMMRIloto4to4GeEe	1LL+17L173	က	q/brl	8	8	ПП	No briDry
		v PLp0: ytaEs71@7MmNoto4to4GeEe	1LL+17L57+	3	q/brl	<3	ςς	ΓŒ	No briDry
		v PLp0: 1637Mm toDoeydaEe (v MX)	1L+79670	3	q/brl	<3	~ 3	ΠŪ	No briDry
Eb0a46: FcN 3gsVIP 8 (Col: 1anD1DC	8 (Col: 1anDIDQ								
vu 11L058+7L51	Gh 05M	v PLp0: 5@7MmRloto4to4aEe	39025170	က	q/brl	83	8	ГФ	No briDry
		v PLp0: 1637/MRdloto4to4aEe	p878p73	က	q/brl	8	8	ΓŒ	No briDry
		v PLp0: Rs71@7MmRloto4to4GeEe	1LL+17L13	3	q/brl	<3	<3	ΓΦ	No briD ry
		v PLp0: ytaEs7t@7MrRloto4to4GeEe	1LL+17L57+	လ	q/bn	%	ς,	ΓΦ	No briDry
		v PLp0: 167Mm toDoeydaEe (v MX)	1L+79670	က	q/bn	8	8	ПВ	No briDry
vu 11L058+7L61	AJVW/Tv 70	v PLp0: 5億7Mmdloto4to4aEe	39025170	3	q/brl	<3	<3	ΓΦ	No brD ry
		v PLp0: 1 G Mirdloto4to4a Ee	p878p73	3	q/brl	<3	<3	ΓŒ	No briD ry
		v PLp0: Rs对GMMdloto4to4GeEe	1LL+17L173	က	q/brl	<3	<3	ФЛ	No briD ry



: 11 of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNU vNTVb vVATH W J.NI vW : 51LLp0 VbXvAT PVAK GVWh BAKW

Wer 7u aytm: Wt SEH						Laboratory L	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
gsVIP	8	Vced							
vu 11L058+7L61	A.NWVTv 70	v PLp0: ytaEs71@7MmRloto4to4GeEe	1LL+17L57+	က	q/brl	٧3	8	ΓΦ	No briD ry
		v PLp0: 1@7Mm toDoeydaEe (v MX)	11+79670	3	q/brl	٧3	ςς	ΓΦ	No briD ry
Eb0a4E: 5 stogeVsle	Eb0a4E: 5 svogeVsled tvornsloff (oN 7 oc VdP 8) (Col: 1 an D1 D1 i	(Col: 1anD1D1i							
v u 11L058+7LLp	Gh 16	v PLp0: 10 7/mRdlotoeydeEe	p376370	က	q/brl	8	8	ΡΠ	No briD ry
		v PLp0: b. oD eydaEe	078870q	က	q/brl	33	ç,	В	No briDry
		v PLp0: ytaEs기G7MmdlotoeydeEe	13+7+L73	က	q/brl	83	°23	В	No briDry
		v PLp0: 10 7MrRlotoeydaEe	p376076	က	q/brl	83	°	В	No briDry
		v PLp0: Rs7 G7MmdlotoeydeEe	13+73975	က	q/brl	83	°	В	No briDry
		v PLp0: 1007TtrRdlotoeydaEe	p17337+	က	q/brl	×3	8	ΠD	No bitDry
		v PLp0: 10 7MrRloto4to4deEe	3+67387+	က	q/brl	×3	8	ΓΦ	No bitDry
		v PLp0: i atr oE TeytaRdlotn e	3+75673	က	q/brl	8	8	Ρ̈́	No biDry
		v PLp0: 1億利MPdlotoeydaEe	1Lp7L+75	က	q/brl	\$	8	Ρ̈́	No birD ry
		v PLp0: TtrRdlotoeydeEe	p97L17+	က	q/brl	83	\$	P	No briDry
		v PLp0: Mm to Do Deyda Ee	p079376	က	q/brl	×3	8	ΓΦ	No briD ry
		v PLp0: 10 ₲77tmdlotoeydaEe	D97LL73	က	q/brl	\$	8	Ρ̈́	No briDry
		v PLp0: 1@7Mmdloto4to4aEe	10575879	က	q/brl	×3	8,	PΩ	No briD ry
		v PLp0: TeytardlotoeydeEe	15p71870	က	q/brl	×3	8	ΠD	No biD ry
		v PLp0: 100億TeytaRdlotoeydaEe	+612517+	8	q/brl	\$3	8	P	No bitDry
		v PLp0: ytaEs汁の7MirRlotoお7cyeEe	11L73p7+	က	q/brl	×3	8	ΓΦ	No biD ry
		v PLp0: Rs 71 の7Mm社loto 石 7 cyeEe	10p+71173	3	q/brl	<3	<3	ΓΦ	No briD ry
		v PLp0: 106677eytaRdlotoeydaEe	5705/6d	က	q/brl	83	8	Ρ̈́	No bitDry
		v PLp0: 1667TtrRdloto4to4aEe	0+71870	က	q/brl	83	\$	P	No briDry
		v PLp0: PeEyaRdlotoeydaEe	p+7L17p	က	q/brl	83	8	e B	No briDry
		v PLp0: 153Mm toDo767Adloto4to4aEe	9+71578	က	q/brl	83	°	В	No briDry
		v PLp0: HexaRdlotor cya. reEe	8p7+876	က	q/brl	×3	8	Ρ̈́	No briDry
		v PLp0: MrRdloto. rflcotoD eydaEe	p37p178	3F	q/brl	<3L	<3L	ΠD	No biD ry
		v PLp0: i dlotoD eydaEe	9Zd8Z0d	3F	q/brl	<3L	<3L	ΓΦ	No briD ry
		v PLp0: I nEC Pollotn e	p37L170	3F	q/brl	<3L	<3L	ΓΦ	No briD ry
		v PLp0: XtoD oD eydaEe	62980d	3F	q/brl	<3L	<3L	ΓΦ	No briD ry
		v PLp0: i dlotoeydaEe	p37L76	3F	q/brl	<3L	<3L	ΓΦ	No briD ry
		v PLp0: TtrRdlotoficotoD eydaEe	p37+970	3F	q/brl	<3L	<3L	ΓΦ	No briD ry
vu 11L058+7L11	Gh 51	v PLp0: 10 7MrRlotoeydeEe	p376370	က	q/brl	<3	\$	ΓΦ	No briD ry
		v PLp0: b. oD eydaEe	D078870	က	q/brl	×3	8	Ρ̈́	No briDry
		v PLp0: ytaEs7t G7MirRlotoeydeEe	13+7+L73	က	q/brl	×3	8	ΠD	No biD ry
		v PLp0: 10 7MrRlotoeydaEe	p376076	3	q/brl	<3	<3	ΓŒ	No briD ry
		v PLp0: Rs71 (\$71/MRIlotoeyde Ee	13+73975	က	q/brl	γ3	ςς	ΠĐ	No briD ry
		v PLp0: 1007TtmdlotoeydaEe	p17337+	က	q/brl	°2	ςς>	ΓΦ	No briD ny
		v PLp0: 10 7 WIR dioto4to4 de Ee	3+67387+	က	q/brl	٧3	8	ПВ	No briD ry
		v PLp0: i atr oE Teytardlotn e	3+2673	က	q/6rl	8	ςς	ΠŪ	No briDry



: 15 of 6L : v u 11L058+ VDeE. DeEy1 : v NI JABNU vNTVb vVATH W Jv NI vW : 51LLp0 VbXvAT PVAK GVWN BAKW

Page h otk Bt. et

ilmeEy Pto-eRy

Vtr 7u aytıx: Wt SEH						Laboratory L	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Eb0a4E: 5 stogeVsle	Eb0a4E: 5 stogeVsled t Wahsi f (on 7 oc VdP 8	(Col: 1anD1D1i ufoVl3Vced							
vu 11L058+7L11	Gh 51	v PLp0: 1億7MrRdlotoeydaEe	1Lp7L+75	က	q/brl	8	8	P	No briDry
		v PLp0: TtrRdlotoeydeEe	p97L17+	က	q/brl	8,	8	۵٦	No briDry
		v PLp0: Mm toDoDeydaEe	p079376	3	q/brl	8	8	۵٦	No biDry
		v PLp0: 10億丌triRdlotoeydaEe	p97L73	က	q/brl	8	8	ΠD	No biDry
		v PLp0: 1@7Mrdloto4to4aEe	10575879	3	q/brl	8	\$	ΘJ	No biDry
		v PLp0: TextaRdlotoeydeEe	15p71870	3	q/brl	Ÿ	8	ΠD	No biDry
		v PLp0: 1006/TeytaRlotoeydaEe	+6125174	က	q/brl	8	8	ΠD	No biDry
		v PLp0: ytaEs71@7Mredloto757 cyeEe	11L73p7+	က	q/brl	ç	8	ΠD	No biDry
		v PLp0: Rs对@7Mrdloto 石不 cyeEe	10p+71173	3	q/brl	8	83	ΠŪ	No briDry
		v PLp0: 10 @G/TeytaRdlotoeydaEe	570576d	က	q/brl	8	8	Π	No biDry
		v PLp0: 1億億丌triAdloto4to4aEe	0+71870	3	q/brl	8	8	۳	No biDry
		v PLp0: PeEyaRdlotoeydaEe	p+7L17p	3	q/brl	8	8	۵٦	No biDry
		v PLp0: 1億7//m toDo767Adloto4to4aEe	9+71578	3	q/brl	8,3	33	ΘJ	No briDry
		v PLp0: HexaRdlotor cya. reEe	8p7+876	က	q/brl	8	8	۵٦	No briDry
		v PLp0: MrRdloto. rilcotoD eydaEe	p37b178	3.	q/brl	<3L	<3L	۳	No biDry
		v PLp0: i dlotoD eydaEe	9Zd8Z0d	32	q/brl	<3L	<3L	۳	No briDry
		v PLp0: I rEd Ralotn e	p37L170	3.	q/brl	<3L	<3L	ΠŪ	No briDry
		v PLp0: XtoDoDeydaEe	679870d	32	q/brl	<3L	<3L	P	No briDry
		v PLp0: i dlotoeydaEe	p37L76	35	q/brl	<3L	<3L	۵٦	No briDry
		v PLp0: TtrPdlotoficotoD eydaEe	p37+970	3L	q/brl	<3L	<3L	۵٦	No briDry
Eb0a4E: 5 stogeVsle	Eb0a4E: 5 stoge Vsled to This (oN 7 oc VdP 8 (Col: 1 and DD	(Col: 1anD/DQ							
v u 11L058+7L51	Gh 05M	v PLp0: 1@ 7MrRdlotoeydeEe	D376370	3	q/brl	8,	\$3	P	No briDry
		v PLp0: b. oDeydaEe	078870	3	q/brl	8,	\$	۳	No briDry
		v PLp0: ytaEs71 @7MmdlotoeydeEe	13+7+L73	က	q/brl	8	8	۵٦	No briDry
		v PLp0: 10 7MrRlotoeydaEe	p376076	က	q/brl	8	8	۵٦	No briDry
		v PLp0: Rs기 G7MrRlotoeydeEe	13+73975	က	q/brl	8,	8	В	No briDry
		v PLp0: 1007TtnRdlotoeydaEe	p17337+	က	q/brl	8	8	۵٦	No briDry
		v PLp0: 10 7Mmdloto4to4GeEe	3+67387+	က	q/brl	8	83	۳	No briDry
		v PLp0: i atr oE TeytaRdlotn e	3+75673	က	q/brl	\$	83	ΠD	No briDry
		v PLp0: 1億利MRdlotoeydaEe	1Lp7L+75	က	q/brl	8	83	۳	No briDry
		v PLp0: TtrRdlotoeydeEe	p97L17+	က	q/brl	8	8	۵٦	No briDry
		v PLp0: Mm toDoDeydaEe	p079376	က	q/brl	8	8	۵٦	No briDry
		v PLp0: 10億77tnRdlotoeydaEe	p97L73	က	q/brl	8	8	۳	No briDry
		v PLp0: 1@7MmRloto4to4aEe	10575879	က	q/brl	\$	8	ΠD	No briDry
		v PLp0: TeytaRtlotoeydeEe	15p71870	က	q/brl	ς>	8	ΠŪ	No briD ry
		v PLp0: 100067TeytaRdlotoeydaEe	+6125174	က	q/brl	×3	۲3	ΠD	No briD ry
		v PLp0: ytaEs71 @7MrNdloto757f cyeEe	11L73p7+	က	q/brl	8	83	۳	No briDry
		v PLp0: Rs71 @7MmRloto 石不 cyeEe	10p+71173	က	q/brl	8	8	۳	No briDry
		v PLp0: 10 @ G TreytaRdlotoeydaEe	p976073	က	q/brl	×3	٧3	ΠD	No brD ny



: 16 of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNU vNTVb vVATH W JVNI vW : 51LLp0 VbXvAT PVAK GVWh BAKW

Wer 7u aytrx: Wt SEH						Laboratory L	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Eb0a4E: 5 stoge Vsled	Eb0a4E: 5 stoge Vsled t Wansia (oN 7 oc VdP 8)								
v u 11L058+7L51	Gh 05M	v PLp0: 1667Ttmdloto4to4aEe	9+71870	က	q/brl	8	ς>	ΠΠ	No briDry
		v PLp0: PeEyaRdlotoeydaEe	p+7L17p	က	q/brl	ς>	۲3	ΠΠ	No briD ry
		v PLp0: 1億利m toDo76和dloto4to4aEe	9+71578	က	q/brl	8	8	ΡΠ	No briD ry
		v PLp0: HexaRdlotor cya. reEe	8p7+876	က	q/brl	8	8	ΡΠ	No briD ry
		v PLp0: MrRdloto. riflcotoDeydaEe	p37p178	3F	q/brl	<3L	<3L	ΡΠ	No briD ry
		v PLp0: i dlotoDeydaEe	97d870d	3F	q/brl	<3L	<3L	Ρ̈́	No briD ry
		v PLp0: I nEd Palotn e	p37L170	3F	q/brl	<3L	<3L	Ρη	No briD ry
		v PLp0: XtoD oD eydaEe	62980d	3F	q/brl	<3L	<3L	ГФ	No briD ry
		v PLp0: i dlotoeydaEe	p37L76	35	q/brl	<3L	<3L	ГФ	No briD ry
		v PLp0: TtrRdlotoflcotoDeydaEe	07945Eq	3F	q/brl	<3L	<3L	ΡΠ	No briD ry
vu 11L058+7L61	AJNWVTV 70	v PLp0: 10 MireliotoeydeEe	p376370	က	q/brl	8	8	ΡΠ	No briD ry
		v PLp0: Jb. oD eydaEe	078870q	က	q/brl	8	8	ΡΠ	No briD ry
		v PLp0: ytaEs对G7MrdlotoeydeEe	13+7+L73	က	q/brl	8,3	8	ГФ	No briD ry
		v PLp0: 1₫ ∄/lindlotoeydaEe	p376076	က	q/brl	8	8	Ρ̈́	No briD ry
		v PLp0: Rs7 G7MmdlotoeydeEe	13+73975	က	q/brl	8,	8	Ρη	No briD ry
		v PLp0: 1007TtmdlotoeydaEe	p1737+	က	q/brl	8	8	Ρ̈́	No briD ry
		v PLp0: 10 7MrRloto4to40eEe	3+67387+	က	q/brl	8,	8	Ρη	No briD ry
		v PLp0: i atr oE TeytaRdlotn e	3+75673	က	q/brl	8	8	ΡΠ	No briD ry
		v PLp0: 1@7MrRlotoeydaEe	1Lp7L+75	က	q/brl	8	8	Ρ̈́	No briD ry
		v PLp0: TtrRdlotoeydeEe	p97L17+	က	q/brl	8	8	ΡΠ	No briD ry
		v PLp0: Mm toD oD eydaEe	p079376	က	q/brl	8,	8	Ρη	No briD ry
		v PLp0: 10@77trRdlotoeydaEe	D97LL73	က	q/brl	87	8	ПП	No briD ry
		v PLp0: 1@7MrRloto4to4aEe	10575879	က	q/brl	87	8	ΤФ	No briD ry
		v PLp0: TeytaRdlotoeydeEe	15p71870	က	q/brl	8	8	ГФ	No briD ry
		v PLp0: 1006ЛеуаRdlotoeydaEe	+612517+	က	q/brl	8,	8	Ρη	No briD ry
		v PLp0: ytaEs71の7Mrdlotoお7cyeEe	11L73p7+	က	q/brl	8,	8	Ρη	No briD ry
		v PLp0: Rs7のMMdloto お7 cyeEe	10p+71173	က	q/brl	8	8	ΡΠ	No briD ry
		v PLp0: 10億677eytaRdlotoeydaEe	p976073	က	q/brl	×3	۲3	ΠΠ	No briD ry
		v PLp0: 1667TtrRdloto4to4aEe	9+71870	က	q/brl	8	83	ΡΠ	No briD ry
		v PLp0: PeEyaRdlotoeydaEe	p+7L17p	က	q/brl	8	83	ΡΠ	No briD ry
		v PLp0: 1偽Mm toDo疮邢dloto4to4aEe	9+71578	က	q/brl	8	8	Ρ̈́	No briD ry
		v PLp0: HexaRdlotor cya. reEe	8p7+876	က	q/brl	8	8	Ρ̈́	No briD ry
		v PLp0: MrRdloto. riflcotoDeydaEe	p37p178	3F	q/brl	<3L	<3L	ΠΠ	No briD ry
		v PLp0: i dlotoDeydaEe	97.0g	3F	q/brl	<3L	<3L	ΡΠ	No briD ry
		v PLp0: I nEG Pollotn e	p37L170	3F	q/brl	<3L	<3L	ΠΠ	No briD ry
		v PLp0: XtoD oD eydaEe	p078679	3Г	q/brl	<3L	<3L	ΓŒ	No briD ry
		v PLp0: i dlotoeydaEe	p37L76	3F	q/brl	<3L	<3L	ΓŒ	No briD ry
		v PLp0: TtrRdlotoficotoD eydaEe	p37+970	3Г	q/brl	<3L	<3L	ΓŒ	No briD ry
Eb0a4F: 5 stogeVsled	Eb0a4F: 5 svogeVsled t roNsl3 (oN 7 oc VdP 🥱 (Col: 1 anD1D1 i	(Col: 1anD1D1i							



: 10 of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNu vNTVb vVATH W JvNi vW : 51LLp0 VbXvAT PVAK GVWh BAKW

W≿r 7u aytrx: Wt SEH						Laboratory L	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Eb0a4F: 5 stogeVsled	Eb0a4F: 5 stogeVsled t roNsl3 (oN 7 ocVdP 8)	(Col: 1anDIDIi ufoVI3/ced							
vu 11L058+7LLp	Gh 16	v PLp0: i dlotor eE@Ee	1L879L7p	က	q/brl	8	8	ΓΦ	No briD ry
		v PLp0: XtoDor eE@Ee	1L878+71	က	q/brl	8	8	P	No briD ry
		v PLp0: 57 dlotoyolceEe	9370978	က	q/brl	8	8	a	No briD ry
		v PLp0: 07 dlotoyolce Ee	1L+70670	3	q/6rl	8	8	П	No briD ry
		v PLp0: 1個孙Mediotor eE@Ee	3017671	3	q/brl	33	8	O I	No briD ry
		v PLp0: 1@7Mrdlotor eE@Ee	1L+70+7p	3	q/brl	33	8	Π	No briD ry
		v PLp0: 1億利MRdlotor eE@Ee	9373L71	က	q/brl	33	8	e T	No briD ry
		v PLp0: 1607Ttmdlotor eE@Ee	15L7857I	က	q/6rl	8	8	Π	No briDny
		v PLp0: 1667Ttmdlotor eE@Ee	8p7+17+	က	q/brl	8	8	П	No briD ry
vu 11L058+7L11	Gh 51	v PLp0: i dlotor eE@Ee	1L879L7p	က	q/brl	8	8	П	No briD ry
		v PLp0: XtoDor eE@Ee	1L878+71	က	q/brl	8	8	Ρ̈́	No briD ry
		v PLp0: 57 dlotoyolce Ee	9370978	င	q/brl	8	8	Ρ̈́	No briD ry
		v PLp0: 07 dlotoyolce Ee	1L+70670	3	q/6rl	8	8	П	No briD ry
		v PLp0: 1個邓MRdlotor eE@Ee	3017671	3	q/brl	8	8	P	No briD ry
		v PLp0: 1 @ ∄vlnRdlotor eE@Ee	1L+70+7p	က	q/brl	۲	83	ΓΦ	No briD ry
		v PLp0: 1億利MRdlotor eE@Ee	9373171	က	q/brl	۲,	83	ΓΦ	No briD ry
		v PLp0: 16007TtmRdlotor eE@Ee	15L7857I	က	q/brl	8	8	ΓΦ	No briD ry
		v PLp0: 1667tindlotor eE@Ee	8p7+17+	က	q/brl	8	ς>	ΓΦ	No briDry
Eb0a4F: 5 stogeVsled	Eb0a4F: 5 stoge Vsled tro Nsl 3 (oN 7 oc VdP 8) (Col: 1 anD 1 DC)	(Col: 1anD1DC)							
vu 11L058+7L51	Gh 05M	v PLp0: i dlotor eE@Ee	1L879L7p	က	q/brl	80	80	ΓΦ	No briD ry
		v PLp0: XtoDor eE@Ee	1L878+71	3	q/brl	\$	8	P	No briDry
		v PLp0: 57 dlotoyolce Ee	9370978	3	q/brl	8	8	a	No briD ry
		v PLp0: 07 dlotoyolceEe	1L+70670	က	q/brl	8	8	۵	No briD ry
		v PLp0: 1個孙Mdlotor eE@Ee	3017671	က	q/brl	8	8	П	No briD ry
		v PLp0: 1 @ ∄MrNdlotor eE@Ee	1L+70+7p	င	q/brl	8	8	P	No briD ry
		v PLp0: 1億利MRdlotor eE@Ee	9373171	က	q/brl	8	8	ΓΦ	No briD ry
		v PLp0: 16007TtmAllotor eE@Ee	15L7857I	က	q/brl	۲	\$	ΓΦ	No briD ry
		v PLp0: 1667TtmNolotor eE@Ee	8p7+17+	င	q/brl	۲	8	Ρ̈́	No briD ry
vu 11L058+7L61	AJWWTV 70	v PLp0: i dlotor eE@Ee	1L879L7p	က	q/6rl	8	8	P	No briD ry
		v PLp0: XtoDor eE@Ee	1L878+71	3	q/brl	\$	8	P	No briDry
		v PLp0: 57 dlotoyolce Ee	9370978	3	q/brl	8	8	P	No briD ry
		v PLp0: 07 dlotoyolce Ee	11+70670	က	q/brl	8	\$	ΓΦ	No briD ry
		v PLp0: 1個水MRdlotor eE@Ee	3017671	က	q/brl	\$	\$	ΓΦ	No briD ry
		v PLp0: 107Mmdlotor eE@Ee	1L+70+7p	3	q/brl	<3	<3	ΓΦ	No briD ry
		v PLp0: 1億水MRdlotor eE@Ee	9373L71	က	q/brl	8	ς,	ΓΦ	No briD ry
		v PLp0: 1607Ttmdlotor eE@Ee	15L7857I	က	q/brl	٧3	ς,	ΓΦ	No briD ry
		v PLp0: 1667TtmNotor eE@Ee	8p7+17+	က	q/brl	۲	\$	ΓΦ	No briD ry
Eb0a42: Sr3nsvoNelhsVeP 8	ISVeP 8 (Col: 1anDIDI								
v u 11L058+7LLp		v PLp0: i dlotofotD	4p7++76	က	q/6rl	8	ç	ΠΠ	No briD ry
	_)		_		



: 13 of 6L : vu 11L058+ VDeE. DeEy1 : vNi ABNu vNTVb vVATH W ルNi vW : 51LLp0 VbXvAT PVAK GVWh BAKW

> Page h otk Bt. et

ilmeEy Pto-eRy

Wtr 7u aytrx: Wt SEH						Laboratory	Laboratory Duplicate (DUP) Report	, t	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Eb0a42: Sr3nsvoNeIhsVeP 8 (IhsVeP 8 (Col: 1anD/ID/I ufoVI3/ced	uf oVI3/ced							
v u 11L058+7LLp	Gh 16	v PLp0: XtoDo. riPdlotoDeydaEe	0755p70	က	q/brl	8	8	a	No briDry
		v PLp0: Mm toDoRdlotoDeydaEe	15070871	က	q/brl	8	°23	a	No briDry
		v PLp0: XtoDofotD	p375375	က	q/brl	8	8	a	No briDry
vu 11L058+7L11	Gh 51	v PLp0: i dlotofotD	9/2++7d+	က	q/brl	8	°	В	No briDry
		v PLp0: XtoDo. nPdlotoDeydaEe	p375p70	က	q/brl	8	\$	a	No briDry
		v PLp0: Mrr to Do Rdloto Deyda Ee	15070871	က	q/brl	8	×3	a	No brDry
		v PLp0: XtoD ofotD	p375375	3	q/brl	<3	\$	ΓΦ	No briDry
Eb0a42: Sr3nsvoNeIhsVeP 8 (IhsVeP 8 (Col: 1anD1DG								
vu 11L058+7L51	Gh 05M	v PLp0: i dlotofotD	97++7d+	က	q/brl	8	\$	В	No briDry
		v PLp0: XtoDo. nPdlotoDeydaEe	p375p70	3	q/brl	89	8	П	No briDry
		v PLp0: Mm to Do Palloto Deyda Ee	15070871	က	q/brl	8	89	П	No briDry
		v PLp0: XtoD ofotD	p375375	က	q/brl	8	89	П	No briDry
vu 11L058+7L61	A.NWTv 70	v PLp0: i dlotofotD	9/2++7d+	က	q/brl	8	89	В	No briDry
		v PLp0: XtoDo. redlotoDeydaEe	p375p70	က	q/brl	8	8	В	No briDry
		v PLp0: Mm toDoRdlotoDeydaEe	15070871	က	q/brl	8	°53	a	No briDry
		v PLp0: XtoD ofotD	p375375	3	q/brl	\$	8	П	No briDry
EboacopuMiB: booov	Eb0aOoplMiB:bov9VcfvesrtroNsl3f59drofsrGoVP8) (Col:1anlOaO	GoVP 8 (Col: 1anl CaCi							
vu 11L058+7L51	Gh 05M	v PLp3(WL)): XeE@(a)4QeEe	31.76578	<u>Б</u>	q/brl	©7>	© ¬>	e T	No briDry
		v PLp3(WL): Na4dydaleEe	9175L76	10	q/brl	510	€99	1L@	L% 75L%
		v PLp3(WLL): VPeEa4dydGeEe	5L879+78	10	q/brl	~1@	~1@	a	No briDry
		v PLp3(WLL): VREFa4dydeEe	8676579	10	q/brl	~10	~1@	Ρ̈́	No briDry
		v PLp3(WL); FicoteEe	8+7675	1 0	q/brl	~10	<10	ГФ	No briDry
		v PLp3(WL): PdeEaEjdteEe	837.178	1 0	q/brl	~1@	~1@	a	No briDry
		v PLp3(WLL): VEydtaReEe	15L7157p	1 <u>0</u>	q/brl	~1@	~1@	a	No briDry
		v PLp3(WL): FlcotaEydeEe	2C+7007L	1 <u>0</u>	q/brl	~1@	~1@	a	No briDry
		v PLp3(WL)): PGeEe	1597LT	10 0	q/brl	~1 0	<10	ΓŒ	No briDry
		v PLp3(WLu): XeE@a)aEydtaReEe	3+73376	10 0	q/brl	<10	<10	ΓŒ	No briD ry
		v PLp3(WU): i dt GeEe	5187.179	10	q/brl	~10	<10	ПФ	No briD ry
		v PLp3(WLL): XeE@(r)flcotaE)deEe	5L379975	1 <u>0</u>	q/brl	~10	~1@	e e	No briDry
		v PLp3(WLL): XeE@(k)flcotaEydeEe	5Lp7L879	10	q/brl	~1@	~1@	a	No briDry
		v PLp3(ML): E. eEo(1GGG))4GeEe	19676973	10	q/brl	~1@	×10	a	No brD ry
		v PLp3(WU): Mm eE@a@l)aEydtaReEe	367pL76	10	q/brl	~1@	~1@	a	No briDry
		v PLp3(WLL): XeE@(g@@)4etGeEe	19175075	1 <u>0</u>	q/brl	~1@	~1@	a	No briDry
Eb0m0/0a1: Solsvbe	Eb0m0/0a1: SolsvbelrovecN 59drof srGoVP 8	ن ت							
vu 11L058+7L51	Gh 05M	v PLp1:i 13 7i 58 FtaByooE	Ш.	1LL	q/brl	13+L	190L	51Ө	L% 73L%
		vPLp1:i 1L 7i 10 FtaByooE	<i>IIII</i>	3F	q/brl	29+L	18T9	899	% 12F%
		vPLp1:i 59 7i 6+ FtaRyooE	Ш.	3F	q/brl	2LL	9PF	970	No briDry
Eb0n0/0a1: Solsvbe	Eb0m0/0a1: SolsvbelrovecN 59drof srGoVP 8 ((Col: 1anD/1DAi							
v u 11L058+7LLp	Gh 16		11111	5	q/6rl	<5L	<5L	ΠΠ	No briDry





<		(ALS)

: 1+ of 6L : vu 11L058+ VDeE. DeEy1 : vNI "ABNu vNTVb vVATH W "VNi vW : 51LLp0 VbXvAT PVAK GVWN BAKW

W≿r 7u aytnx: Wt SEH						Laboratory L	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Eb0n0/0a1: Solsvb	Eb0n0/0a1: SolsvbelrovecN 59drof srGoVP 8	(Col: 1anD1DAi uf oVI3Vced							
vu11L058+7L11	Gh 51	v PL8L: i + 7i 9 FtaRyno E	шш	2F	q/brl	<5L	<5L	ΓŒ	No briD ry
Eb0m0/0a1: Solsvbe	Eb0n0/0a1: SolsvbelrovecN 59drof srGoVP 9	(Col: 1anD/ID4i							
vu 11L058+7L51	Gh 05M	vPL8L:i +7i 9 FtaRynoE	<i>1111</i>	2F	q/brl	0pL	03L	09	L% 75L%
vu 11L058+7L61	A.NW.Tv 70	v PL8L:i + 7i 9 FtaRynoE	шш	2F	q/brl	<5L	<5L	ΓŒ	No briDry
Eb0n0/0a1: SolsvHe	ef oyers Ge 59 drof sr Go VP	Eb0m0/0a1: SolsvHef oyers Ge 59drof srGoVP uREbM A010 6 rs-1 👂 (Col: 1anl Qa4i							
vu 11L058+7L51	Gh 05M	vPLp1:>i 1L7i 1+FtaBynoE	ш	1LL	q/brl	1p3L	185L	Ф0	L% 73L%
		vPLp1:>i 1+7i 60 FtaB,noE	Ш	111	q/6rl	101L	183L	2+ ©	L% 73L%
		v PLp1: >i 60 7i 0L FtaR, w E	1111	1LL	q/brl	11L	19L	30@	No brDry
Eb0n0/0a1: SolsvHe	ef oyers G.e 59 drof sr GoVP	Eb0n0/0a1: SolsvHef oyers Ge 59drof srGoVP uREbM A010 6rs-1 § (Col: 1anD1DAi							
v u 11L058+7LLp	Gh 16	v PL8L:i + 7i 1L FtaRyoE	шш	2F	q/brl	<5L	<5L	ΓŒ	No briDry
vu 11L058+7L11	Gh 51	v PL8L: i + 7i 1L FtaRyoE	шш	2F	q/brl	<5L	<5L	ΓŒ	No briDry
Eb0n0/0a1: SolsvHe	ef oyers Ge 59 drof sr Go VP	Eb0m0/0a1: SolsvHef oyersGe 59drof srGoVP uREbM A010 6 rs-1							
vu 11L058+7L51	Gh 05M	v PL8L: i + 7i 1L FtaRyoE	шш	2F	q/brl	180	7+0	900	L% 75L%
vu 11L058+7L61	A.NWVTv 70	vPL8L: i + 7i 1L FtaRyoE	<i>IIII</i>	2F	q/brl	<5L	<5L	ΓΦ	No briDry
Ebono: BSEXR 8 (Col: 1anDIDAi								
v u 11L058+7LLp	Gh 16	v PL8L: XeE@Ee	p170675	-	q/6rl	۲	۲	П	No brDry
		v PL8L: TolceEe	11878876	22	q/brl	<5	<5	ΓΦ	No briDry
		v PL8L: v ydGr eE@Ee	1LL70170	22	q/brl	<5	<5	ΓΦ	No briDry
		v PL8L: Deya7& 4ata72 GeEe	11.876876	22	q/brl	<5	<5	ΓΦ	No briDry
			1L+70576						
		v PL8L: otydo 72 QeEe	9370p7+	2	q/brl	<5	<5	ΓΦ	No briD ry
		v PL8L: Na4dydaleEe	9175L76	က	q/brl	٧3	ς,	ΓΦ	No briD ry
vu 11L058+7L11	Gh 51	v PL8L: XeE@Ee	p170675	_	q/brl	۲	7	ΓΦ	No briDry
		v PL8L: TolceEe	1L878876	2	q/brl	<5	<5	P	No briDry
		v PL8L: v ydGr eE@ Ee	1LL70170	2	q/brl	<5	<5	П	No briDry
		v PL8L: Deya7& 4ata72 GeEe	1L876876	2	q/brl	<5	<5	Π	No briD ry
			1L+70576		:	1			:
		v PL8L: otydo72 GeEe	93.70p7+	2	q/brl	V2	V2.	a B	No briDry
		v PL8L: Na4dydaleEe	9175L76	က	q/brl	\$	8	L@	No briDry
8	Col: 1anDID4i								
v u 11L058+7L51	Gh 05M	v PL8L: XeE@Ee	p170675	_	q/brl	633	+09	5Ф	L% 75L%
		v PL8L: TolceEe	1L878876	2	q/brl	+1	39	503	L% 75L%
		v PL8L: v yddr eE@Ee	1LL70170	2	q/6rl	9	9	ΓŒ	No briDry
		v PL8L: Deya7& 4ata72 GeEe	11.876876	2	q/brl	17	7	ΓΦ	No briD ry
			1L+70576						
		v PL8L: otydo 72 GeEe	9370p7+	2	q/brl	6	6	ΓΦ	No briD ry
		v PL8L: Na4dydaleEe	9175L76	က	q/6rl	99	70	19 ©	No briDry
vu 11L058+7L61	A.NWTv 70	v PL8L: XeE@Ee	p170675	_	q/brl	^	۲ <u>۰</u>	ΓΦ	No briD ry
		v PL8L: TolceEe	1L878876	2	q/brl	<5	<5	ГФ	No briDry

ALS

: 1p of 6L : vu 11L058+ VDeE. DeEy1 : vNI "ABNU vNTVb vVATH W "JvNi vW : 51LLp0 VbXv AT PVAK GVWh BAKW

Page h otk Bt. et

ilmeEy Pto⊷eRy

Wcr 7u aytnx: Wt SEH						Laboratory D	Laboratory Duplicate (DUP) Report		
Laboratory sample ID Client sample ID	Client sample ID	Method: Compound	CAS Number LOR	LOR	Unit	Original Result	Original Result Duplicate Result	RPD (%)	Recovery Limits (%)
Eb0n0: BSEXR 8 (Eb0m0: BSEXR 8 (Col: 1anD1D4i ufoVI3/ced								
vu 11L058+7L61	A.W.W.Tv. 20	v PL8L: v ydGreE@Ee	1LL70170	2	q/brl	<5	<5	ΓΦ	No briD ny
		v PL8L: Deya7& 4ata72 GeEe	11876876	2	q/brl	<5	<5	ΓΦ	No briD ry
			1L+70576						
		v PL8L: otydo 72 GeEe	9370p7+	2	q/brl	<5	<5	ΠΠ	No briD ry
		v PL8L: Na4dydaleEe	9175L76	3	q/brl	<3	<3	ΓØ	No briD ry



E60DIF: 6 PPowed Msjor (sl30VP8) (Col: 1an4AQi

: 18 of 6L : vu 11L058+ VDeE. DeEy1 : vNI ABNu vNTVb vVATH W よNi vW

> h otk Bt. et i IneEy Pto-eRy

: V NI JABNU VNTVB VVATH W JV NI VW : 51LLp0 VbXvAT PVAK GVWN BAKW

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

4ataDeyet ns yo DoEnyot 4oyeEyan larotayotC ROE, aD Tde qoalnyC ROE, do you be no day the DarotayotC io Byton yatgey Tde qcalin/C RDEXtol yetD u eydo. / barotayotC XIaBk tefets yo aE aEalOye ftee Daytmx yo zdinRd all teageErys ate a..e. inE yde saDe molcDes of 4to4otymoEs as cse. inE syaE. at. saD4le 4te4ataymoEOTde 4ct4ose of ydins Qi a Earl Qes OT de 4ct 4ose of york. Qi 4ata Deydo, 4ten 18 yo Do Engot Deydo, 4ten 18 you be of yorks a Bare and a Carte of 4ton 18 and 18 and

Nor Julyix: Wf SEH CAS Number LOR Unit Et 01Q Solsv6 3Poyed povätP 8 (Col: 1 and moni) G.W51L7.1L 3 Dg/b Et 01Q Solsv6 3Poyed povätP 9 (Col: 1 and both) G.W51L7.1L 3 Dg/b Et 01Q Solsv6 3Poyed povätP 9 (Col: 1 and both) G.W51L7.1L 3 Dg/b Et 01Q Solsv6 3Poyed povätP 9 (Col: 1 and both) G.O. 1 and both G.O. 2 and both Dg/b Et 01Q Solsv6 3Poyed povätP 9 (Col: 1 and both) G.O. 1 and both G.O. 2 and both Dg/b Et 01Q Solsv6 3Poyed povätP 9 (Col: 1 and both) G.O. 1 and both Dg/b Dg/b Et 01Q Solsv6 3Poyed povätP 9 (Col: 1 and both) T/m 1 Dg/b Et 01 ab: 1 vks/b/39 GB b(Sarsior 8) (Col: 1 and both) T/m 1 Dg/b Et 01 ab: 1 vks/b/39 GB b(Sarsior 8) (Col: 1 and both) T/m 1 Dg/b Et 01 ab: 1 vks/b/39 GB b(Sarsior 8) (Col: 1 and both) T/m 1 Dg/b Et 01 ab: 1 vks/b/39 GB b(Sarsior 8) er Call self i sP pold Au(GB et 8) (Col: 1 and Add) T/m 1 Dg/b Et 01 ab: 1 vks/b/39 GB b(Sarsior 8) er Call self i sP pold Au(GB et 8) (Col: 1 and Add) 1 Dg/b	About Blank (MB) Report Result <3 <3 <7 TTT	Spike Concentration 5LLL Dg/b 5LLL Dg/b 5LLL Dg/b 5LL Dg/b 5LL Dg/b 5LL Dg/b 153 Dg/b	Laboratory Control Spike (LCS) Report Spike Recovery (%) 1 LCS Lo B900 9 9800 9 9900 9 9900 9 9900 9	98 11 98 11 15 pp 15 15 15 15 15 15 15 15 15 15 15 15 15	110 110 110 115p 15p
7.1L 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Result	Spike Concentration 5LLL Dg/b 5LLL Dg/b 5LLL Dg/b 5LL Dg/b 5LL Dg/b 5LL Dg/b 153 Dg/b	99@ 99@ 99@ 99@ 96@ 95@	98 98 pp pp 81	110 110 110 115p 15p
At IL 3 At IL 3 At IL 3 At I 1 At I 1 <	Result	SLLL Dg/b 5LLL Dg/b 5LLL Dg/b 5LL Dg/b 5LL Dg/b 5LL Dg/b 153 Dg/b	99@ 98@ 95@ 95@	98 88 80 dd dd dd 81 81 81 81 81 81 81 81 81 81 81 81 81	110 110 110 15p 15p
7.1L 3 7.1L 3 7.1L 3 7.1T 1 7.1T 1 9978 1 1.1L7+ 1	434344454647474141424343444445464747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747<	5LLL Dg/b 5LLL Dg/b 5LL Dg/b 5LL Dg/b 5LL Dg/b 153 Dg/b	99@ 98@ 95@	88 88 89 89 89 89 89 89 89 89 89 89 89 8	1L0 1L0 15p 15p
7.1L 3 7.1L 3 7.1T 1 7.7T 1 19978 1 11 11 11 11 11 11 11 1	434343444747414142434444454647474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747<	5LLL Dg/b 5LLL Dg/b 5LL Dg/b 5LL Dg/b 5LL Dg/b 153 Dg/b	99@ 98@ 95@ 95@	88 86 QQ QQ QQ 18	1L0 1L0 15p 15p
7.1L 3 7.1T 1 7.7T 1 9978 1 1L7+ 1	434344454647474141424343434343434343434343434343434343434343434343434444454546474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747474747<	5LLL Dg/b 5LLL Dg/b 5LL Dg/b 5LL Dg/b 5LL Dg/b	98@ 95@ 91@	88 89 QQ QQ QQ 18	1L0 1L0 15p 15p
7.1L 3 7.7T 1 7.7T 1 19978 1 1.17+ 1	<3<1<1	5LLL Dg/b 5LL Dg/b 5LL Dg/b 5LL Dg/b 153 Dg/b	95@	88 dd dd dd 18	11.0 15p 15p
777 1 1 5 7777 1 1 1 1 1 1 1 1	~3 7777 7777 1 1	5LL Dg/b 5LL Dg/b 5LL Dg/b 5LL Dg/b	95@	88	11.0 15p 15p
7777 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	43 TTT 1	5LL Dg/b 5LL Dg/b 5LL Dg/b 5LL Dg/b	95@	88 dd dd dd 18	11.0 15p 15p
777 1 1 1 1 1 1 1 1 1 1	TTT TTT 1>	\$LL Dg/b \$LL Dg/b \$LL Dg/b	95G 91Q 95G	QQ QQ 18	15p 15p
7777 1 1 1 1 1 1 1 1 1 1	TTT TTT	5LL Dg/b 5LL Dg/b 5LL Dg/b 15 3 Dg/b	95@	g g g g g g g g g g g g g g g g g g g	15p 15p
777 1 1 1 1 1 1 1 1 1 1	TTT	5LL Dg/b 5LL Dg/b 15@ Dg/b	9100	g g 8	15p
7777 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TTTT	5LL Dg/b 5LL Dg/b 15 3 Dg/b	910	g g 8	15p 15p
777 1 1 p978 1 1 LL7+ 1 1 LL7+	<i>TTT</i>	5LL Dg/b 15 3 Dg/b	95@	pp 81	15p
9777 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		5LL Dg/b 15 3 Dg/b	95@	pp 81	15p
p978 1 1 LL74 1	∇	15@ Dg/b	11.8	18	152
p978 1 1 p978 1 p978 1 1 p1 p978 1 p978 1 p978 1 p978 1 p978 1 p978 p978 p978 p978 p978 p978 p978 p978	₹	15 @ Dg/b	11.8	81	152
p978 1 1 LL74 1)		100
-	₹	15@ Dg/b	© 86	81	153
1					
	₹	1LLL Dg/b	115	88	11p
1+88p7L7+ 1 Dg/b	₹	1LLL Dg/b	ව 666	88	11p
1+88p7L7+ 1 Dg/b	₹	1LLL Dg/b	© 86	88	11p
p00L7bL75 1 Dg/b	^ \	3 Dg/b	1L1	81	159
p06979370 1 Dg/b	^ ^	3 Dg/b	1L5	8L	15L
p00L76673 1 Dg/b	^ ^	3L Dg/b	1L3	8d	150
p00L7L97p 1 Dg/b	7	3L Dg/b	0 86	6d	151
p00L껴Lሹ 1 Dg/b	^ ^	3 Dg/b	© +6	81	159
p06979370 1 Dg/b	^ \	3 Dg/b	93@	8L	15L
	^ ^	3L Dg/b	9FQ	8d	150
-	₹	3L Dg/b	910	6d	151
		∇ ∇ ∇		3 Dg/b 3 Dg/b 3 L Dg/b 3 L Dg/b	3 Dg/b 9+G 3 3 Dg/b 93G 3L Dg/b 91Cd 3L Dg/b 91Cd



Page : 19 of 6L
h otk Bt. et : vu 11L058+ VDeE. DeEy1
i læEy : vNI ÆBNU vNTVb vVATH W JvNi vW
Pto-eRy : 51LLp0 VbXvAT PVAK GVWh BAKW

Wer Zi attr. W. SEH				Method Blank (MB)		Laboratory Control Spike (LCS) Report	CS) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	Low	High
E60D F: 6 PPowed Msjor (sl3bVP 8) (Col: 1an4AQ i ufoVI3/ced	/I3/ced							
v ML96F: i alR©D	P00L7pL75	_	Dg/b	7	3 Dg/b	115	81	159
v ML96F: u agEesncD	D06979370	_	Dg/b	<u>\</u>	3 Dg/b	95@	BL 8	15L
v ML96F: Wb. ncD	p00L75673	_	Dg/b	7	3L Dg/b	-Оф6	8d	150
v ML96F: PoyassrcD	p00L7L97p	1	Dg/b	1>	3L Dg/b	D d6	6d	151
E2 0A0F: 6 3Powed Mels P 38 1(buMp 8) (Col: 1an4 Dm0i								
v GL5LV7F: VICDrEncD	p05979L73	L@1	Dg/b	<l@1< td=""><td>LG Dg/b</td><td>1L5</td><td>BL 8</td><td>15L</td></l@1<>	LG Dg/b	1L5	BL 8	15L
v GL5LV形: VtseErR	p00L76875	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>1/+</td><td>8b</td><td>119</td></l@l1<>	LO Dg/b	1/+	8b	119
v GL5LVÆ: i a. D応D	6290L700q	L@LL1	Dg/b	<l@ll1< td=""><td>LO Dg/b</td><td>110</td><td>88</td><td>11</td></l@ll1<>	LO Dg/b	110	88	11
v GL5LVÆ: i or aly	p00L70870	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>1/+</td><td>89</td><td>111</td></l@l1<>	LO Dg/b	1/+	89	111
v GL5LV形: i o44et	8778700d	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>1LL</td><td>+8</td><td>1L8</td></l@l1<>	LO Dg/b	1LL	+8	1L8
v GL5LVÆ: bea.	p06979571	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>1L3</td><td>76</td><td>11</td></l@l1<>	LO Dg/b	1L3	76	11
v GL5LV7F: u aEgaEese	p06979+73	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>9+6</td><td>89</td><td>111</td></l@l1<>	LO Dg/b	9 +6	89	111
v GL5LV7F: NnRel	D00L7L57L	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>1Lp</td><td>+8</td><td>115</td></l@l1<>	LO Dg/b	1Lp	+8	115
v GL5LV7F: WéleEndD	pp8570975	L@1	Dg/b	<l@1< td=""><td>LO Dg/b</td><td>98©</td><td>98</td><td>111</td></l@1<>	LO Dg/b	98 ©	98	111
v GL5LVÆ: ZrÆR	p00L7++7+	L@L3	Dg/b	<l@l3< td=""><td>LO Dg/b</td><td>11.6</td><td>+ &</td><td>15L</td></l@l3<>	LO Dg/b	11.6	+ &	15L
v GL5LVÆ: XotoE	p00L70578	L@3	Dg/b	<l@3< td=""><td>TQ Dg/b</td><td>D+6</td><td>+</td><td>166</td></l@3<>	TQ Dg/b	D +6	+	166
v GL5LVÆ: JoE	p0697897+	L@3	Dg/b	<l@3< td=""><td>LG Dg/b</td><td>11.5</td><td>6d</td><td>119</td></l@3<>	LG Dg/b	11.5	6d	119
E20A0F: 6-3 Powed Mels P 39 L(buMp 8) (Col: 1 and DruAi								
v GL5LV形: VIcDI后见	p05979L73	L@1	Dg/b	<l@1< td=""><td>LG Dg/b</td><td>116</td><td>8F</td><td>15L</td></l@1<>	L G Dg/b	116	8F	15L
v GL5LVÆ: VtseErR	p00L76875	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>11.9</td><td>89</td><td>119</td></l@l1<>	LO Dg/b	11.9	89	119
v GL5LVÆ: i a. D呕D	p00L70679	L@LL1	Dg/b	<l@ll1< td=""><td>LO Dg/b</td><td>1L+</td><td>88</td><td>11L</td></l@ll1<>	LO Dg/b	1L+	88	11L
v GL5LV形: i or aly	p00L70870	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>1/+</td><td>8p</td><td>111</td></l@l1<>	LO Dg/b	1/+	8p	111
v GL5LVÆ: i o44et	p00L73L78	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>1Lp</td><td>+8</td><td>1L8</td></l@l1<>	LO Dg/b	1Lp	+8	1L8
v GL5LVÆ: bea.	p06979571	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>1Lp</td><td>76</td><td>11L</td></l@l1<>	LO Dg/b	1Lp	76	11L
v GL5LVÆ: u aEgaEese	p06979+73	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>93@</td><td>8р</td><td>111</td></l@l1<>	LO Dg/b	93@	8р	111
v GL5LV7F: NnRkel	D00L7L57L	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>11L</td><td>+8</td><td>115</td></l@l1<>	LO Dg/b	11L	+8	115
v GL5LV7F: WeleErcD	pp8570975	L@1	Dg/b	<l@1< td=""><td>LO Dg/b</td><td>Ø+6</td><td>98</td><td>111</td></l@1<>	LO Dg/b	Ø +6	98	111
v GL5LV7F: ZnER	p00L7++7+	L@L3	Dg/b	<l@l3< td=""><td>LO Dg/b</td><td>1L0</td><td>+8</td><td>15L</td></l@l3<>	LO Dg/b	1L0	+8	15L
v GL5LV7F: XotoE	p00L70578	L@3	Dg/b	<l@3< td=""><td>LO Dg/b</td><td>D96</td><td>+</td><td>166</td></l@3<>	LO Dg/b	D 96	+	166
v GL5LV7F: ±oE	+7687690d	L@3	Dg/b	<l@3< td=""><td>LG Dg/b</td><td>980</td><td>6d</td><td>119</td></l@3<>	LG Dg/b	980	6d	119
E2 0A0S: SolsvMelsvP @ I(buMp 8) (Col: 1an4Dnmi								
v GL5LV7T: VIcDrEnd	p05979L73	L@1	Dg/b	<l@1< td=""><td>LG Dg/b</td><td>1/+</td><td>83</td><td>156</td></l@1<>	L G Dg/b	1/+	83	156
v GL5LV7T: VtseErR	p00L76875	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>11.5</td><td>+8</td><td>11L</td></l@l1<>	LO Dg/b	11.5	+8	11L
v GL5LV7T: i a. D1©D	p00L70679	L@LL1	Dg/b	<l@ll1< td=""><td>LO Dg/b</td><td>11.5</td><td>8p</td><td>111</td></l@ll1<>	LO Dg/b	11.5	8p	111
v GL5LV7T: i or aly	D00L70870	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>1L3</td><td>88</td><td>110</td></l@l1<>	LO Dg/b	1L3	88	110
v GL5LV7T: i o44et	D00L73L78	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>1/+</td><td>88</td><td>11L</td></l@l1<>	LO Dg/b	1/+	88	11L
v GL5LV7T: bea.	p06979571	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>086</td><td>76</td><td>110</td></l@l1<>	LO Dg/b	086	76	110
v GL5LV7T: u aEgaEese	p06979+73	L@L1	Dg/b	<l@l1< td=""><td>LO Dg/b</td><td>1LL</td><td>8р</td><td>116</td></l@l1<>	LO Dg/b	1LL	8р	116
v GL5LV7T: NrRel	D00L7L57L	L@L1	Dg/b	<l@l1< td=""><td>LƠ Dg/b</td><td>1L3</td><td>89</td><td>116</td></l@l1<>	LƠ Dg/b	1L3	89	116



<	-	ALS

: 5L of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNu vNTVb vVATH W JvNi vW : 51LLp0 VbXvAT PVAK GVWh BAKW

Wobr7u avtnx: Wft SEH				Method Blank (MB)	1	Laboratory Control Spike (LCS) Report	:S) Report	
`				Report	Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SOT	Low	High
E2 0 A0S: Solsv Mels (P b u Mp 8) (Col: 1 an 4 Dnni uf o VI 3 / ced	3/ced							
v GL5LV7T: WéleErdD	pp8570975	L@1	Q/bQ	<l@1< th=""><th>LØ Dg/b</th><th>D06</th><th>81</th><th>1L9</th></l@1<>	LØ Dg/b	D 06	81	1L9
v GL5LV7T: ZnER	p00L7++7+	LOL3	Dg/b	<l@l3< th=""><th>LØ Dg/b</th><th>116</th><th>85</th><th>+11</th></l@l3<>	LØ Dg/b	116	85	+11
v GL5LV7T: XotoE	p00L70578	L@3	Dg/b	<l@3< th=""><th>LO Dg/b</th><th>⊕d6</th><th>0+</th><th>160</th></l@3<>	LO Dg/b	⊕d6	0+	160
v GL5LV7T: JoE	p0697897+	L@3	Dg/b	<l@3< th=""><th>LG Dg/b</th><th>1L1</th><th>81</th><th>153</th></l@3<>	LG Dg/b	1L1	81	153
E2 01 QF: 6 3Powed Merf cr9 G9 FLMp 8 (Col: 1an4DaDi								
v GL63F: u etRtC	p06979p7+	L@LL1	Dg/b	<l@ll1< th=""><th>L@1LL Dg/b</th><th>111</th><th>p1</th><th>153</th></l@ll1<>	L@1LL Dg/b	111	p1	153
E2 01 CF: 6 3Powed Merfcr9 C9 FLMp 8) (Col: 1an4Dmli								
v GL63F: u etRtC	+Zd62690d	L@LL1	Dg/b	<l@ll1< th=""><th>L@1LL Dg/b</th><th>1/+</th><th>p1</th><th>153</th></l@ll1<>	L@1LL Dg/b	1/+	p1	153
E2 01 CS: SolsvHef oyers Gre Merf cr9 C9 FLMp 8 (Col: 1aa0n11i	a0n11i							
v GL63T: u etRtC	p06979p7+	L@LL1	Dg/b	<l@ll1< th=""><th>L@1LL Dg/b</th><th>1LL</th><th>6+</th><th>153</th></l@ll1<>	L@1LL Dg/b	1LL	6+	153
E20CDF: 63Powed 5 exsysteVI (hroN3cN 8) (Col: 1 annminA								
v GL3LF: HexamaleEyi dtoD ₪D	1830L 75979	L@1	Dg/b	<l@1< th=""><th>LG Dg/b</th><th>11.+</th><th>8L</th><th>15L</th></l@1<>	LG Dg/b	11.+	8L	15L
E20QP: 6 PPowed 5 exsysteVI (hroN & N 8) (Col: 1 anrmmhi	mi i							
v GL3LF: HexamaleEyi dtoD®D	1830L万979	L@1	Dg/b	<l@1< th=""><th>L@ Dg/b</th><th>Ф06</th><th>8F</th><th>15L</th></l@1<>	L@ Dg/b	Ф06	8F	15L
EK0AC2: Free f9sV3de G3 6 3Pfrele t Vsv9Per 8) (Col: 1anmaCmi	raQni							
v KL53G: Ftee i CaEn e	11111	L@L0	Dg/b	<l@l0< th=""><th>LG Dg/b</th><th>8+@</th><th>9d</th><th>111</th></l@l0<>	LG Dg/b	8+@	9d	111
EKOAC2: Free f 9sV3de C9 6 3Pf rele t Vsv9Per 8) (Col: 1anmaCD)	пафі							
v KL53G: Ftee i CaEn e	<i>11111</i>	L@L0	Dg/b	<l@l0< th=""><th>LG Dg/b</th><th>©+d</th><th>9d</th><th>111</th></l@l0<>	LG Dg/b	© +d	9d	111
EKOAC2: Free f 9sV3de C9 6 3Pf rele t Vsv9Per 8) (Col: 1annan0i	ran0i							
v KL53G: Ftee i CaEn e	<i>11111</i>	L@L0	Dg/b	<l@l0< th=""><th>LG Dg/b</th><th>860</th><th>9d</th><th>111</th></l@l0<>	LG Dg/b	860	9d	111
EKOAn2: Solsv(9sVade B96 OF relet Vs@Per 8 (Col: 1annan1i								
v KL5+G: Toyal i CaEл e	3p71573	L@L0	Dg/b	<l@l0< th=""><th>LG Dg/b</th><th>1Lp</th><th>83</th><th>153</th></l@l0<>	L G Dg/b	1Lp	83	153
EK0An2: Solsv (9sVade B9 6 Of relet Vsv9Per 8 (Col: 1anmanAi								
v KL5+G: Toyal i Ca臣n e	3p71573	L@L0	Dg/b	<l@l0< th=""><th>LG Dg/b</th><th>11.9</th><th>83</th><th>153</th></l@l0<>	L G Dg/b	11.9	83	153
EKOAm2: Wesktf 316 3Pof 35 Ge (9sv3de B963 Frelet Vsv9 Per	Weber 8 (Col: 1annanli	nmanl i						
v KL58G:h eak VRn MnssoRanrlei CaEn e	<i>11111</i>	L@L0	Dg/b	<l@l0< th=""><th>LG Dg/b</th><th>83@</th><th>0+</th><th>1L0</th></l@l0<>	LG Dg/b	83@	0+	1L0
EKOAm2: Wesk tf 2d 6 3PP of 3s Goe (9sV2de B9639 frele tVsv9Per 8) (Col: 1anman4i	w9Per 8) (Col: 1a	nnan4i						
v KL58G:h eak VRn MnssoRaarlei Ca En e	11111	L@L0	Dg/b	<l@l0< th=""><th>LG Dg/b</th><th>810</th><th>0+</th><th>1L0</th></l@l0<>	LG Dg/b	810	0+	1L0
EK040b: Fvcorate G9 b(Sarstor 8) (Col: 1anQ4nDi								
v KLOLP: Flcotn e	1+98070878	ΓQ	Dg/b	<lø< th=""><th>3@ Dg/b</th><th>1L1</th><th>8d</th><th>15L</th></lø<>	3@ Dg/b	1L1	8d	15L
EK040b: Fvcorthe G9 b(S3rslor 8) (Col: 1anQ4al i								
v KLOLP: Flcotn e	1+98070878	ΓQ	Dg/b	<lø< th=""><th>3@ Dg/b</th><th>-066</th><th>p8</th><th>15L</th></lø<>	3@ Dg/b	-066	p8	15L
EK040b: Fvcorate @ b(Sarslor 8) (Col: 1anQ4aQ								
v KL0LP: Flcotn e	1+98070878	ΓQ	Dg/b	<lø< th=""><th>3@ Dg/b</th><th>-066</th><th>8d</th><th>15L</th></lø<>	3@ Dg/b	-066	8d	15L
EKOCh 2: R3r3esPR CO 6 OF frelet Vs (OPer 8) (Col: 1an4 A41i	4 41i							
v KL3pG: Nnytne as N		L@1	Dg/b	<l@1< th=""><th>LG Dg/b</th><th>8p@</th><th>80</th><th>115</th></l@1<>	LG Dg/b	8p @	80	115



4		N
	1	7
		C

: 51 of 6L : vu 11L058+ VDeE. DeEy1 : vNI "ABNU vNTVb vVATH W "JvNi vW : 51LLp0 VbXvAT PVAK GVWN BAKW

WAT 3 DOTTO WE SEH				Method Blank (MB)		Laboratory Control Spike (LCS) Report	S) Report	
Act in agree and a second a second and a second a second and a second a second and a second and a second and				Report	Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SOT	Low	High
EKOCA2: R3r3e sPR C96 Pfrelet Vsv9Per 8 (Col: 1an4A4ai	A4ai							
v KL3pG: Nnjtnje as N	<i>IIII</i>	L@1	Dg/b	<l@1< th=""><th>LG Dg/b</th><th>@T6</th><th>80</th><th>115</th></l@1<>	LG Dg/b	@T6	80	115
EKO Ca2: R3r3 esPR Co 6 OPfrelet Vsv9Per 9, (Col: 1an4 A Chà	AQNi							
v KL3pG: Nnjtnje as N		L@1	Dg/b	<l@1< th=""><th>LG Dg/b</th><th>9T@</th><th>80</th><th>115</th></l@1<>	LG Dg/b	9 T@	80	115
EK 0002: R3r3e 7 vc PR3rsle s PR 8ROxi C9 6 3 frele t Vs 19 Per 8) (Col: 1 an Dmmi	We Per 8 (Col: 1 and	Dmmi						
v KL39G: Nntine w Nntaye as N		L@1	Dg/b	<l@1< th=""><th>LG Dg/b</th><th>910</th><th>9d</th><th>15р</th></l@1<>	LG Dg/b	910	9d	15р
EKOQD2: R3r3e 7xPR3rsle sPR &ROxi @ 6 Pf rele t Vsv9Per	νθPer 8) (Col: 1anDmmi	Jmmi J						
v KL39G: Nntine w Nntaye as N	11111	L@1	Dg/b	<l@1< th=""><th>LG Dg/b</th><th>©68</th><th>9d</th><th>15p</th></l@1<>	LG Dg/b	© 68	9d	15p
EK0a12: Hesfl3ye bhoP7horcPsPb @ d3Frele sVs@Per 9 (Col: 1an4A4ni	8 (Col: 1an4A4ni							
v KLp1G: AeaRyme Pdos4dotcs as P	11111	L@1	Dg/b	<l@1< th=""><th>LG Dg/b</th><th>9pQ</th><th>80</th><th>11.8</th></l@1<>	LG Dg/b	9pQ	80	11.8
EK0a12: Hesf13/e bhoP7horcPsPb @ dPf rele sVs@Per	9 (Col: 1an4AQIi							
v KLp1G: AeaRyme Pdos4dotcs as P	<i>IIII</i>	L@1	Dg/b	<l@1< th=""><th>LG Dg/b</th><th>91©</th><th>80</th><th>11.8</th></l@1<>	LG Dg/b	91 ©	80	11.8
EK0nQM: pcv3de sPpAu 8) (Col: 1an4QA1i								
v KL83: Wolfn e as W67	1809+75378	rar	Dg/b	<lø< th=""><th>LG Dg/b</th><th>Ф06</th><th>85</th><th>11+</th></lø<>	LG Dg/b	Ф06	85	11+
EK0mQM: pcv3desPpAu8) (Col:1an4QAAi								
v KL83: Wclfn e as W57	1809+75378	rar	Dg/b	<lø< th=""><th>LG Dg/b</th><th>8+Q</th><th>85</th><th>+11+</th></lø<>	LG Dg/b	8+Q	85	+11+
Eb0a4t: MoVof9f & tronsl \$59drofsrGoVP 9 (Col: 1anD/D/i	anDMDii							
v PLp0: Wiche Ee	1LL70573	3	q/brl	<3	2Γ μg/b	9103	0d	155
v PLp0: &o4to4Gr eE@Ee	9878578	က	q/6rl	\$	2Γ μg/b	980	BL	15L
v PLp0: E7Pto4Gr eE@Ee	1L67+371	က	q/brl	\$	2F µg/b	0 86	bΓ	15L
v PLp0: 1@G77tnDeydGreE@eEe	1L874p78	က	q/bn	<3	2F µg/b	8 886	p1	119
v PLp0: seR7XcyGr eE@Ee	16379878	က	q/brl	\$3	2F µg/b	1L1	p5	15L
v PLp0: 1@@7ftnDeydGr eE@Ee	937467+	က	q/brl	\$	2Γ μg/b	1LL	9d	119
v PLp0: yety⊼cydr eE@Ee	98 1 L+7+	3	q/brl	<3	2Γ μg/b	980	9d	119
v PLp0: 47bo4to40yolceEe	+2d&266	က	q/brl	\$3	2F µg/b	1L1	p1	151
v PLp0: E7XcyGr eE@Ee	1L073178	က	q/bn	\$	2L µg/b	1L0	+3	151
Eb0a4t: MoVof9f & troNsl 3 59drofsrGoVP 8 (Col: 1anD1DQ	anDriba							
v PLp0: WydeEe	1LL70573	က	q/brl	8>	2Γ μg/b	ම 3 @	0d	155
v PLp0: bo4to40r eE@Ee	9878578	က	q/brl	<3	2Γ μg/b	98 @	-8F	15L
v PLp0: E7Pto4Gr eE@Ee	1L67+371	က	q/brl	<3	5L µg/b	-006	pL	15L
v PLp0: 1@G7TtnDeydGreE@e	1L874p78	က	q/bn	<3	5L µg/b	© d6	p1	119
v PLp0: seR7Xcydr eE@Ee	16379878	3	q/brl	<3	2F hg/b	93 @	p5	15L
v PLp0: 1₲₲₮₶₱eyddr eE@eEe	937+67+	က	q/brl	<3	5L µg/b	93@	9d	119
v PLp0: yety/Xcydr eE@Ee	98.1L+7+	က	q/bn	\$3	2F µg/b	ტ ძ6	9d	119
v PLp0: 47bo4to40yolceEe	9978p7+	3	q/brl	<3	2F hg/b	© 96	p1	151
v PLp0: E7Xcydr eE@Ee	1L073178	င	q/bn	<3	2Γ μg/b	89Ф	+3	151
Eb0a4B: Ox9geVsled (oN 7ocVdP 🐧 (Col: 1anD/ID/I								
v PLp0: I rEd VReyaye	11871370	3F	q/brl	<3L	5LL µg/b	9 6+	3р	161



: 55 of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNU vNTVb vVATH W JvNi vW : 51LLp0 VbXvAT PVAK GVWh BAKW

Page h otk Bt. et

ilmeEy Pto-eRy

Wer Zu aktos: Wt SEH				Method Blank (MB)		Laboratory Control Spike (LCS) Report	SS) Report	
				Report	Spike	Spike Recovery (%)	Recovery Limits (%)	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SOT	Low	High
Eb0a4B: Ox9geVsled (oN 7ocVdP 8) (Col: 1anD/ID/li ufoVI3/ced	oVI3/ced							
v PLp0: 57XcyaEoEe (u v K)	979678g	3L	q/brl	<3L	9/PH 19/P	1L0	6+	163
v PLp0: 07u eyd 0754 e Eya Eo Ee (u XK)	11871171	3L	q/brl	<3L	9/pd 129	⊕d6	8+	16+
v PLp0: 57HexaEbEe (u XK)	3917p87+	3F	q/brl	<3L	5LL µg/b	⊕d6	8+	168
Eb0a4B: Ox9geVsled (oN 7ocVdP 8) (Col: 1anD1DQ								
v PLp0: I nEd VReyaye	11871370	3F	q/brl	<3L	5LL µg/b	11.5	3р	161
v PLp0: 57XcyaEoEe (u v K)	p879676	3F	q/brl	<3L	5LL µg/b	1L3	6 +	163
v PLp0: 07u eyd 0734e Eya Eo Ee (u XK)	11871171	3F	q/brl	<3L	9/Ph 19/P	11L	8+	16+
v PLp0: 57HexaEoEe (u XK)	3917p87+	3F	q/brl	<3L	9/PH 19/P	11L	8+	168
Eb0a4(:pcvoVsled(oN7ocVdP8)(Col:1anDfDfi								
v PLp0:i atro E. rsclfn e	p37137L	က	q/brl	<3	SL µg/b	115	d+	15p
Eb0a4(:pcvoVsled(oN7ocVdP8)(Col:1anD1DQ								
v PLp0:i atro E. rsclfn e	p37137L	က	q/brl	<3	SL µg/b	930	d+	15p
Eb0a46: FcN3psVIP 8 (Col: 1anDIDIi								
v PLp0: 5億7MRdloto4to4aEe	39075L7p	က	q/brl	8	SL µg/b	⊕d6	39	158
v PLp0: 1637MRdloto4to4aEe	p878p73	က	q/brl	<3	5L µg/b	© d6	dd	151
v PLp0: R\$71@7MRdioto4to4DeEe	1LL+17L173	က	q/brl	<33	SL µg/b	ტ 96	pL	118
v PLp0: 以aEs对 @7MRIloto4to4 DeEe	1LL+17L57+	က	q/brl	\$3	5L µg/b	Ф86	++	15L
v PLp0: 1偽7Mm toDoeydaEe (v MX)	11+79670	3	q/brl	<3	5L µg/b	99Q	p8	150
Eb0a46: FcN 35VIP 8 (Col: 1anD/IDG								
v PLp0: 5G7Mmdloto4to4aEe	39075L7p	3	q/brl	<3	2Γ μg/b	© d6	39	158
v PLp0: 1@7MrRdloto4to4aEe	p878p73	က	q/brl	\$	5L µg/b	1L3	dd	151
v PLp0: R\$71@7MRIloto4to4GEE	1LL+17L173	က	q/brl	\$3	5L µg/b	95Ө	pF	118
v PLp0: ytaEs71@7MRIloto4to4OeEe	1LL+17L57+	3	q/brl	<3	2Γ μg/b	8рФ	++	15L
v PLp0: 1偽7Mm toDoeydaEe (v MK)	11+79670	3	q/brl	<3	5L µg/b	0 86	p8	150
Eb0a4E: 5 svogeVsled t Withsi 3 (oN 7 oc VdP 9 (Col: 1 anD1 D1 i	при							
v PLp0: Mindloto. rilcotoDeydaEe	p37p178	3Г	q/brl	<3L	SLL µg/b	118	38	108
v PLp0: i dlotoD eydaEe	p0.78p.76	3L	q/brl	<3L	SLL µg/b	116	+2	105
v PLp0: I nEG Rellotn e	p37L170	3F	q/brl	<3L	9/FT hg/b	110	+	101
v PLp0: XtoD oD eydaEe	p078679	3F	q/brl	<3L	9/FT hg/b	111	3р	161
v PLp0: i dlotoeydaEe	p37L76	3L	q/brl	<3L	5LL µg/b	111	0+	168
v PLp0: TtrRdlotoflcotoD eydaEe	p37+970	3Г	q/brl	<3L	9/FL hg/b	1Lp	d+	161
v PLp0: 10 7/MrdlotoeydeEe	p376370	3	q/brl	<3	2Γ μg/b	1L5	p1	153
v PLp0: Jb. oD eydaEe	p078870	3	q/brl	<3	5L µg/b	950	+	163
v PLp0: メオaEsアイ₲アルイヤRlotoeydeEe	13+7+L73	င	q/brl	₹3	5L µg/b	1L5	p3	151
v PLp0: 10 7MrPdlotoeydaEe	p376076	က	q/brl	\$	5L µg/b	1L0	dd	151
v PLp0: Rs71637MRdlotoeydeEe	13+73975	3	q/brl	<3	5L µg/b	1LL	p8	155
v PLp0: 1007 71trRdlotoeydaEe	p17337+	3	q/brl	€>	2Γ μg/b	-Ө66	pL	15L
v PLp0: 10 AMRdioto4to40eEe	3+67387+	3	q/brl	<3	g/bd 15	98@	0d	155



STA STA

: 56 of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNu vNTVb vVATH W JvNi vW : 51LLp0 VbXvAT PVAK GVWh BAKW

				Method Blank (MB)		Laboratory Control Spike (LCS) Report	CS) Report	
				Report	Spike	Spike Recovery (%)	Recovery Limits (%)	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SOT	Low	High
Vsled t Wahsi f (oN 7 oc VdP 8	(Col: 1anD1D1i ufoVI3/ced							
v PLp0: i atroE TeytaRdlotn e	3+75673	က	q/brl	\$	g/ hg/b	11.5	35	156
v PLp0: 1億利MRilotoeydaEe	1Lp7L+75	က	q/brl	8	5L µg/b	110	рз	153
v PLp0: TtriPdlotoeydeEe	p97L17+	က	q/brl	\$	5L µg/b	11.5	dd	151
v PLp0: Mir to Do De yda Ee	p078376	က	q/brl	\$	5L µg/b	D66	+d	155
v PLp0: 10 G7TtmdlotoeydaEe	p97LL73	က	q/brl	8	g/br 15	980	8d	15+
v PLp0: 1個邓MRIloto4to4aEe	10575879	က	q/brl	8	g/ hg/b	1LL	6d	153
v PLp0: TeytaRdlotoeyde Ee	15p71870	က	q/brl	8	g/bd/p	98@	† <u>a</u>	155
v PLp0: 100 G7TeytaRdlotoeydaEe	+612517+	က	q/brl	\$	g/bd/p	91@	+3	119
v PLp0: yaEs게@7MRdloto 石	11L73p7+	က	q/brl	8	g/ hg/b	9ГӨ	+0	15+
v PLp0: R\$71@7MRdloto 孩子cyeEe	10p+71173	က	q/brl	\$	g/ hg/b	8+ ®	30	165
v PLp0: 10@TeytaRdlotoeydaEe	570576q	က	q/brl	8,	5L µg/b	11.5	рз	161
v PLp0: 1667Ttmdloto4to4aEe	0+71870	က	q/brl	8	g/ hg/b	D +6	рз	166
v PLp0: PeEyaRllotoeydaEe	p+7L17p	က	q/brl	\$	g/ hg/b	€Dd6	+0	118
v PLp0: 16Mm toDo形和oto4to4aEe	8+71578	က	q/brl	8,	5L µg/b	D +0	30	150
v PLp0: HexaRdlotor cya. reEe	8p7+876	က	q/brl	8	5L µg/b	111	3L	160
Eb0a4E: 5 stogeVsled t Warhsi f (oN 7 oc VdP 8 (Col: 1 anD1 DQ	ol: 1anDMDQ							
v PLp0: Mredioto. rilcotoDeydaEe	p37p178	3F	q/brl	<3L	SLL µg/b	Ф96	38	108
v PLp0: i dlotoD eydaEe	97.0d	3L	q/brl	<3L	5LL µg/b	ФФ	+2	105
v PLp0: I nEG Reliotin e	p37L170	3L	q/brl	<3L	5LL µg/b	8 9@	+	101
v PLp0: XtoDoDeydaEe	p078679	3L	q/brl	<3L	5LL µg/b	+p@	3р	161
v PLp0: i dlotoeydaEe	p37LF76	3L	q/brl	<3L	5LL µg/b	ф8ф	0+	168
v PLp0: TtriNdlotoficotoDeydaEe	079-75d	3L	q/brl	<3L	5LL µg/b	⊕06	d+	161
v PLp0: 10 7 MrRdlotoeyde Ee	p376370	3	q/brl	<3	5L µg/b	900	p1	153
v PLp0: b. oD eydaEe	078870d	က	q/brl	\$	5L µg/b	115	+	163
v PLp0: yaEs71仍7WRdlotoeydeEe	13+7+L73	3	q/brl	<3	5L µg/b	95 0	p3	151
v PLp0: 10 7MmRlotoeydaEe	p376076	က	q/brl	<3	5L µg/b	-686	dd	151
v PLp0: Rs71637MRIlotoeydeEe	13+73975	3	q/brl	<3	5L µg/b	Ø +6	8d	155
v PLp0: 1007TtmdlotoeydaEe	p17337+	3	q/6rl	<3	5L µg/b	91®	pL	15L
v PLp0: 10 7 MrRdloto4to4 CeEe	3+67387+	3	q/brl	<3	5L µg/b	910	0d	155
v PLp0: i atroE TeytaRdlotn e	3+12673	3	q/brl	<3	5L µg/b	810	3р	156
v PLp0: 1@7MrdlotoeydaEe	1Lp1/2+75	3	q/brl	<3	5L µg/b	026	p3	153
v PLp0: TtriPdlotoeydeEe	p97L17+	3	q/brl	<3	5L µg/b	930	dd	151
v PLp0: Min to Do Deyda Ee	975670d	က	q/brl	\$	5L µg/b	ф d6	+d	155
v PLp0: 10/67TtmdlotoeydaEe	647TZd	3	q/brl	<3	5L µg/b	D 66	8d	15+
v PLp0: 1億개mdloto4to4aEe	10575879	3	q/brl	<3	5L µg/b	1L1	6d	153
v PLp0: TeytaRdlotoeydeEe	15p71870	က	q/brl	€\$	5L µg/b	93 ®	+d	155
v PLp0: 10067feytaRdlotoeydaEe	+612517+	3	q/brl	<3	2Γ μg/b	02G	+3	119
v PLp0: 以aEs71@7/MRdloto757f cyeEe	11L73p7+	က	q/brl	€5	2Γ μg/b	93 @	+0	15+
v PLp0: R\$71@7MRIloto 否不 cyeEe	10p+71173	က	q/6rl	8	2Γ μg/b	88Ф	30	165



ALS)

: 50 of 6L : vu 11L058+ VDeE. DeEy1 : vNI "ABNU vNTVb vVATH W "VNI vW : 51LLp0 VbXvAT PVAK GVWN BAKW

Page h otk Bt. et

ilmeEy Pto-eRy

Wcr 7u aytx: Wt SEH				Method Blank (MB)		Laboratory Control Spike (LCS) Report	S) Report	
	-			Report	Spike	Spike Recovery (%)	Recovery Limits (%)	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	Том	High
Eb0a4E: 5s voge Vsled t v Ørhsl 3f (oN 7 oc V dP 8) (Col: 1 an D1 DC) ufo VI 3// ced	col: 1anD1DQ ufoVI3/ced							
v PLp0: 10@@TeytaRdlotoeydaEe	570576d	က	q/brl	\$	9/Бп 19	1Lp	p3	161
v PLp0: 1 GG Ttmdloto4to4aEe	0+71870	င	q/brl	۷3	9/5 на/р	1L9	p3	166
v PLp0: PeEyardlotoeydaEe	p+7.17p	3	q/brl	\$	SL µg/b	8p@	+0	118
v PLp0: 1億孙m toDo疮邢dloto4to4aEe	9+71578	က	q/brl	\$	2F µg/b	D d6	30	150
v PLp0: HexaRdlotor cya. reEe	8p7+876	3	q/brl	٧3	2Г µg/b	рзд	3Г	160
Eb0a4F: 5 stogeVsled t ronsiff (on 7 oc VdP 8) (C	(Col: 1anDIDIi							
v PLp0: i dlotor eE@Ee	1L879L7p	3	q/brl	\$	SL µg/b	11.5	81	151
v PLp0: XtoDor eE@Ee	1L878+71	8	q/brl	\$3	SL µg/b	0 80	p3	119
v PLp0: 57 dlotoyolce Ee	9370978	က	q/brl	\$	5L µg/b	1L1	9d	151
v PLp0: 07 dlotoyolce Ee	1L+70670	က	q/brl	\$	9/р нд/р	116	b5	15L
v PLp0: 1 @ MMRIlotor e E@ Ee	3017p671	3	q/brl	<3	9/р нд/р	110	9d	119
v PLp0: 107Mrdlotor eE@Ee	1L+10+1p	က	q/brl	\$	9/р нд/р	1Lp	0d	15L
v PLp0: 1億7Mrdlotor eE@Ee	9373L71	က	q/brl	\$	9/р 12	1L0	8d	118
v PLp0: 1607tirkdlotor eE@Ee	15LR571	က	q/brl	\$	5L µg/b	11L	3+	158
v PLp0: 1667tindlotor eE@Ee	8p7+17+	က	q/brl	\$	9/р нд/р	110	6+	156
Eb0a4F: 5svogeVsled t roNsl3 (oN7ocVdP 8) (Col: 1anD1DC	ol: 1anDIDQ							
v PLp0: i dlotor eE@Ee	1L879L7p	က	q/brl	<3	9/Бр	1L1	81	151
v PLp0: XtoDor eE@Ee	1L878+71	3	q/brl	<3	9/р нд/р	88®	p3	119
v PLp0: 57 dlotoyolce Ee	9370978	3	q/brl	<3	9/р нд/р	08€	9d	151
v PLp0: 07 dlotoyolce Ee	1L+D670	3	q/brl	<3	5L µg/b	8 006	p5	15L
v PLp0: 1@7MmRlotoreE@Ee	3017671	3	q/brl	<3	5L µg/b	8 +6	9d	119
v PLp0: 107/Mindlotor eE@Ee	1L+70+7p	င	q/brl	٧3	9/г на/р	⊕ d6	0d	15L
v PLp0: 1億7Mmdlotor eE@Ee	9373L71	3	q/brl	۷3	gr hg/b	© 66	8d	118
v PLp0: 1個の71tmRlotor eE@Ee	15L78571	3	q/brl	<3	2Г µg/b	83@	3+	158
v PLp0: 1667tmRlotor eE@Ee	8p7+17+	3	q/brl	\$	2Г µg/b	95@	6+	156
Eb0a42 : Sr3nsvoNeIhsVeP 8 (Col: 1anDIDii								
v PLp0: i dlotofotD	+b7++76	3	q/brl	<3	9/р нд/р	1L3	dd	151
v PLp0: XtoDo. rRdlotoDeydaEe	p375p70	3	q/brl	<3	9Г hg/b	9b@	6+	11p
v PLp0: Min toDoRdlotoDeydaEe	15070871	3	q/brl	<3	2Г µg/b	-986	39	119
v PLp0: XtoD ofotD	p375375	3	q/brl	<3	9/р нд/р	99 ®	60	151
Eb0a42 : Sr3nsvoNeIhsVeP 8 (Col: 1anDIDC								
v PLp0: i dlotofotD	+b7++76	3	q/brl	<3	9/р нд/р	96G	dd	151
v PLp0: XtoDo. rRdlotoDeydaEe	p375p70	3	q/brl	<3	9/р нд/р	88@	6+	11p
v PLp0: Min toDoRdlotoDeydaEe	15070871	3	q/brl	<3	5L µg/b	850	39	119
v PLp0: XtoD ofotD	p375375	3	q/brl	\$	2Г µg/b	8LØ	60	151
Eb0aCopLMiB: bo OVCf vesr tro Ns13f 59 drofsr Go VP 8) (Col: 1 anl Cl Di	P 8) (Col: 1anl Q Di							
v PLp3(Wtu): Na4dydaleEe	9175L76	_	q/brl	~1 0	3 µg/b	9 000	5p @	150
v PLp3(Wu): VReEa4dydGeEe	5L879+78	~	q/brl	~10 0	3 hg/b	Ø+0	63	159



: 53 of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNU vNTVb vVATH W J.NI vW : 51LLp0 VbXvAT PVAK GVWh BAKW

Mer A pater. Wt SEH				Method Blank (MB)		Laboratory Control Spike (LCS) Report	SS) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	TOW	High
Eb0a@plMiB: bowovcfvesrt ronsi 3f 59 drofsr GoVP 8 (C	(Col: 1anl Q Di uf oVI3/ced	/I3/ced						
v PLp3(Wu): VReEa4dydeEe	8676579	1	q/brl	~1@	3 hg/b	D 80	63	15p
v PLp3(Wu): FlcoteEe	8+76670	_	q/brl	~1@	3 hg/b	33@	+9	16L
v PLp3(Wu): PdeEaEydteEe	837.178	_	q/brl	<10	3 hg/b	© 9d	05	165
v PLp3(Wu): VEydtaReEe	15L7157p	_	q/brl	~1@	3 hg/b	р 00ф	90	165
v PLp3(WL): FlcotaBdeEe	2C+7007L	_	q/brl	~1@	3 hg/b	85 0	10	101
ν PLp3(WL); PαeEe	1597L7	_	q/brl	~1@	3 hg/b	Ø+8	OF.	105
v PLp3(WLL): XeE@a)aEydtaPeEe	3+73376	_	q/brl	~1@	3 hg/b	810	99	136
v PLp3(Wu): i dtGseEe	5187.179	_	q/brl	~1@	3 hg/b	85@	d9	103
v PLp3(Wu): XeE@(r)flcotaEydeEe	5L379975	_	q/brl	<10	3 hg/b	9 +8	63	131
v PLp3(Wu): XeE@(k)flcotaEydeEe	5Lp7L879	_	q/brl	~1@	3 hg/b	p8@	69	101
v PLp3(Wu): XeE@(a)4GeEe	31.76578	PO	q/brl	ე >	3 hg/b	2 06d	10	169
v PLp3(Wu): 上 eEo(1660)4QeEe	19676973	-	q/brl	~1@	3 hg/b	910	63	101
v PLp3(WUJ): MmreE@Ba@JaEydtaReEe	367pL76	1	d/gu	<10	3 hg/b	⊕26	+9	105
v PLp3(WU): XeE@(gd@4etGeEe	19175075	1	d/gu	<10	3 hg/b	Ф 16	1	105
Eb0acopolMiB: box0VcfvesrtroNsl3f59drofsrGoVP8 (Col: 1anl CaCi	ol: 1ani QaQi							
v PLp3(Wu): Na4dydaleEe	9175L76	-	q/brl	~1@	g/brl g	pdd	5p@	150
v PLp3(Wu): VReEa4dydGeEe	5L879+78	_	d/gu	<10	3 hg/b	₽8 ©	63	159
v PLp3(Wu): VReEa4dydeEe	8676579	-	q/brl	<10	3 hg/b	850	63	15р
v PLp3(WU): FlcoteEe	8+7p67p	-	q/brl	<10	3 µg/b	88@	+9	16L
v PLp3(Wu): PdeEaEydteEe	837.178	_	q/brl	~1 @	3 µg/b	© 68	02	165
v PLp3(Wu): VEydtaReEe	15L7157p	-	q/brl	<1 <u>@</u>	3 µg/b	© +8	90	165
v PLp3(Wu): FicotaEydeEe	2C+7007L	-	q/brl	~1 @	3 µg/b	D 6+	01	101
v PLp3(Wu): PCteEe	1597LL	-	q/brl	~1@	3 hg/b	Ффф	OL.	105
v PLp3(Wu): XeE@baaeydtaReEe	3+73376	_	q/brl	~1@	3 hg/b	Ø+8	99	136
v PLp3(WU): i dtCseEe	5187.179	_	q/brl	ot>	g/brl g	p0@	Ф9	103
v PLp3(Wu): XeE@(r)flcotaEydeEe	5L379975	_	q/brl	~1 @	3 µg/b	860	63	131
v PLp3(Wu): XeE@(k)flcotaEydeEe	5Lp7L879	~	q/brl	<1@	3 µg/b	p1@	69	101
v PLp3(Wu): XeE@(a)4GeEe	31.76578	r _G	q/brl	© 7>	3 µg/b	Ф6+	01	169
v PLp3(WU): 上. eEo(1 66 0)4CeEe	19676973	1	q/brl	<10	3 hg/b	83@	63	101
v PLp3(Wu): Mr eE@a@)aEydtaReEe	367plæ	~	q/brl	<10	3 µg/b	80 ®	+9	105
v PLp3(Wu): XeE@(gd@4etGeEe	19175075	1	d/gu	<1 @	3 hg/b	9 +d	1	105
Eb0m0/0a1: SolsvbelrovecN 59drofsrGoVP 9 (Col: 1anl	Qmi							
v PLp1:i 1L 7i 10 FtaBynoE	<i>1111</i>	3L	d/gu	<3L	300L µg/b	8+8	0+	150
v PLp1:i 13 7i 58 FtaRynoE	<i>IIII</i>	1LL	d/gu	<11.	1p850 µg/b	ტ ძ6	pL	16L
v PLp1: i 59 7i 6+ FtaRynoE	<i>IIII</i>	3L	q/brl	<3L	q/brl 06+9	1L0	8+	158
Eb0m0/0a1: SolsvbelrovecN 59drofsrGoVP 9 (Col: 1anl Qa4i	Qa4i							
v PLp1:i 1L 7i 10 FtaRywE	11111	3F	d/gu	<3F	300L µg/b	119	0+	150
vPLp1:i 13 7i 58 FtaRynoE	<i>IIII</i>	1LL	q/brl	<11L	1p850 µg/b	11L	pF	16L
v PLp1:i 59 7i 6+ FtaRynoE	11111	3F	q/brl	<3L	g/bd 06+9	115	8+	158



ALS.

: 5+ of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNu vNTVb vVATH W JVNI vW : 51LLp0 VbXvAT PVAK GVWh BAKW

Wbr 7u avtn: Wt SEH			Method Blank (MB)		Laboratory Control Spike (LCS) Report	S) Report	
			Report	Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Method: Compound CAS Number	nber LOR	Unit	Result	Concentration	SO7	Low	High
Eb 0n0/0a1: SolsvbelrovecN 59drof srGoVP 9 (Col: 1anD1DAi							
v PL8L:i+7i9 FtaRynoE	7777 5L	q/brl	<5L	65L µg/b	1L0	b5	16+
Eb0m0/0a1: SolsvbelrovecN 59drof srGoVP 8 (Col: 1anD/1D4i							
v PL8L: i + 7i 9 Ftargno E	<i>TTT</i> 5L	d/gu	<5L	65L µg/b	1L1	p5	16+
Eb0n0/0a1: SolsvHef oyers Ge 59 drof sr GoVP uREbM A010 6 rs-1 8 (8 (Col: 1anl Q m						
v PLp1: >i 1L 7i 1+ FtaRyooE	7777 1LL	q/brl	<1LL	1L65L µg/b	p5@	pL	16L
vPLp1:>i1+7i60FtaByooE	<i>TTT</i> 1LL	q/brl	<1LL	1++0L µg/b	-Ө66	pL	16L
v PLp1:>i 60 7i 0L FtaRynoE	7777 1LL	q/brl	<1LL	1L8L µg/b	111	pL	16L
Eb0m0/0a1: SolsvHefoyersGe 59drofsrGoVP uREbM A010 6rs-1 8 (Col: 1anl Qa4i	Col: 1anl Qa4i						
vPLp1:>i1L7i1+FtaRynoE	11L 1FF	q/brl	<1LL	1L65L µg/b	95 0	pL	16L
v PLp1: >i 1+ 7i 60 FtaBynoE	7777 1LL	q/brl	<1LL	1++0L µg/b	11L	pL	16L
v PLp1:>i 60 7i 0L FtaRywoE	7777 1LL	d/gu	<1LL	1L8L µg/b	113	ρL	16L
Eb0m0/0a1: SolsvHef oyers Ge 59 drof sr GoVP uREbM A010 6 rs-1 8 (8 (Col: 1anD1DAi						
vPL8L:i +7i 1L FtaRywE	7777 5L	q/brl	<5L	6pL µg/b	1L0	pL	16L
Eb0m0/0a1: SolsvHef oyers Ge 59drof sr GoVP uREbM A010 6 rs-1 § (Col: 1anD1D4i	Col: 1anD1D4i						
v PL8L:i + 7i 1L FtaRywE	7777 5L	q/brl	<5L	6pL µg/b	Ф66	pL	16L
Eb0m0: BSEXR 8 (Col: 1anD1DAi							
ν PL8L: XeE@Ee	675 1	q/brl	_	5L µg/b	€066	9d	15p
v PL8L: Tolce Ee	876 5	q/brl	<5	2Γ μg/b	® d6	0d	158
v PL8L: v ydGr eE@Ee	170 5	q/brl	<5	2Γ μg/b	Ф06	p5	15+
v PL8L: Deyp7& 4ata72 GeEe 1L876876 1L470576	176 5 578	q/brl	<5	0/F hg/b	. 000	6+	166
v PL8L: otydo?Z GeEe 93.70p7+	p7+ 5	q/brl	<5	5L µg/b	930	0d	158
v PL8L: Na4dydaleEe 9175L76	L76 3	q/brl	<3	3 hg/b	1Lp	pL	16L
Eb0n0: BSEXR 8 (Col: 1anD1D4i							
v PL8L: XeE@Ee p170675	675 1	q/brl	<1	2Γ μg/b	080	9d	15p
v PL8L: Tolce Ee	876 5	q/brl	<5	2Γ μg/b	ම 3 ゆ	0d	158
v PL8L: v yddr eE@Ee 1LL70170		d/gu	<5	2Γ μg/b	Ө+6	p5	15+
v PL8L: Deyp7& 4ata72 GeEe 1L876876	176 578	q/brl	<5	OL µg/b	1L5	6+	166
707.6Fe 93.707.6	07+ 55	ua/b	\$5	51 ua/b	C +6:	00	158
		d/pn	, &	3 ua/b	9 00	2 -	161
		D D D)	2 55 52 5)	ŗ I	5



 Page
 : 5p of 6L

 h otk Bt. et
 : vu 11L058+ VDeE. DeEy1

 i IneEy
 : vNI ABNu vNTVb vVATH W Jr Ni vW

 Pto-eRy
 : 51LLp0 VbxvAT PVAK GVWh BAKW

Matrix Spike (MS) Report

The qualing Rection yet Duaytow Wilkine (u.W) tefets yo a Encipalar otayot Saliny sa Dalle salike. In the set of yating sey of yatigey a Eal Opes of the actaose of yours oil at a Do Enjor 4 one Enjalar otayon effers, of a Eal Ope teRometres OMJaynR A erBomet CbrD nys as 4 et lar ota yot CMaya, QcalnyCBr-eRymes (MQBs) QL eal teRomet Cta Eges syaye. Da Crezame. nEy de eme Ey of sa D4 le Daytox nEy et fete EReO

Matrix Spike (MS) Report

Wcr 7u aytnx: Wt SEH

				0	1/0/		1/0/ -7:: 1
Laboratory sample ID Clie	Client sample ID	Mothord: Commoning	CAS Number	Spike	Spike Recovery (%)	Low	Recovery Limits (%)
1	an sample ID	Method: Compound	CAS Number	Concentration	CMI	AOW.	ligita
e SScrG	velr3fisPpO4 AuG96t 8)(Col:1an4A4G)	lan4A4G					
v u 11L05+07LL5 VEc	VEoE© ocs	v ML01G: Wclfaye as WB0 7Tctr n nDeytnR	108L87p978	1L Dg/b	# NoyMeyetDnEe.	ρL	16L
E60412 : pcvsle &crcdt elr3 i sP pO4 Au 66	Nelr3fisPpO4 AuG96t 8)(Col:1an4AC0ii	lan4AQDi					
v u 11L058+7LL5 Gh 0	0	v ML01G: Wolfaye as WB0 7Tctr n nDeytnR	108L87p978	1L Dg/b	# NoyMeyetDnEe.	pL	16L
8 04Q2 : (hvoræle 6 3Pf rel	E604C2: (hvortae6 of reles Vs@Per8 (Col: 1an4A44i						
v u 11L05+07L5 VEc	VEoE© ocs	v ML03G: i dlotn e	1+88p7LL7+	OLL Dg/b	# NoyMeyetDnEe.	pL	16L
8 04Q2 : (hvor3de 6 3Pf rel	E604C2: (hvorate 6 39 reles Vs@Per 8) (Col: 1an4A4Di						
vu 11L058+7LL5 Gh 0	0	v ML03G: i dlotn e	1+88p7LL7+	OLL Dg/b	860	pL	16L
80402: (hvor 3de 6 3Pf rel	E604C2: (hvorate 639 reles Vs@Per8 (Col: 1an4AC4i						
vu 11L058+7L55 Gh	Gh 06M	v ML03G: i dlotn e	1+88p7LL7+	OLL Dg/b	# NoyMeyetDnEe.	pL	16L
2 0 A 0 F: 6 3 Proyed Melsy	E2 0A0F: 6 3Powed MelsvP 39 l(buMp 8) (Col: 1an4Dn0i						
v u 11L05817LL1 VEc	VEoECD ocs	v GL5LV 元: VtseEnR	p00L78875	LG Dg/b	1L1	88	169
		vGL5LVF:ia.D応D	p00L70679	L@3 Dg/b	115	p3	161
		v GL5LVÆ: i oraly	D00L70870	LG Dg/b	116	dd	159
		v GL5LVÆ: i o44et	P00L73L78	LG Dg/b	1L8	p1	15p
		v GL5LV ∓ : bea.	P06979571	LG Dg/b	© d6	p1	156
		v GL5LVÆ: u aEgaEese	p06979+73	LG Dg/b	110	++	165
		v GL5LV Æ: N r Rel	D00L7L57L	LG Dg/b	111	9d	159
		v GL5LV不: ZrER	p00L7++7+	LG Dg/b	11.+	8+	16+
2 0 A 0 F: 6 3 Proyed Melsy	E20A0F: 6 3Powjed Mels (P G) (the bull properties of the propertie						
vu 11L058+7L5L Gh	Gh 01	v GL5LVT: VtseErR	p00L78875	LG Dg/b	2 066	88	169
		vGL5LVÆ:ia.DncD	p00L70679	L@3 Dg/b	115	p3	161
		v GL5LV ∓ :i oraly	p00L70870	LG Dg/b	119	dd	159
		v GL5LVÆ: i o44et	D00L73L78	LG Dg/b	11	p1	15p
		v GL5LV形: bea.	p06979571	LG Dg/b	⊕86	p1	156
		v GL5LV Æ: u aEgaEese	5Z+6Z690d	LG Dg/b	1L5	‡	165
		v GL5LV	D00L7L57L	LG Dg/b	110	9d	159
		v GL5LVÆ: ZÆR	p00L7+7+	LG Dg/b	115	8+	16+
2 0 A0S: Solsv MelsvP G9 1	E2 0A0S: SolsvMelsvP						
v u 11L056p7LL6 VEc	VEoED ocs	v GL5LV7T: VtseEnR	p00L78875	1 Dg/b	110	p5	10+
		vGL5LV7T:ia.DncD	p00L70679	LG3 Dg/b	1Lp	9d	161
		v GL5LV兀∶i oraly	p00L70870	1 Dg/b	11.9	8+	165
		vGL5LV7T:i o44et	D00L73L78	1 Dg/b	116	p1	153
		v GL5LV7T: bea.	P06979571	1 Dg/b	110	8+	16L
		v GL5I VT∵u aFdaFese	52+62690d	1 Dg/b	11.5	9+	159



: 58 of 6L : vu 11L058+ VDeE. DeEy1

W^ IN 7	h BAKW
· VNI JABNu VNTVb VVATH WI JVNI VM	51LLp0 VbXv AT PVAK GVWh BAKW
	••

V∕cr7u aytπ: Wt SEH				Matrix Spike (MS) Report		
			Spike	Spike Recovery (%)	Recovery Limits (%)	imits (%)
Laboratory sample ID Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
E2 0A0S: SolsvMelsvP @ I(buMp 8) (Col: 1an4Dnni uf oVI3/ced						
v u 11L056p7LL6 VEoECD ocs	v GL5LV7T: NnRkel	p00L7L57L	1 Dg/b	116	p5	158
	v GL5LVT: ZÆR	p00L7++7+	1 Dg/b	111	d+	159
E2 0I CF: 6 3PPowed Merfcr9 C9 FLMp 8) (Col: 1an4DaDi						
vu 11L058+7LL1 Gh 6	v GL63F: u etRtC	₽06978p7+	L@1LL Dg/b	1L1	bL	16L
E2 0I CF: 6 3PPowed Merfcr9 C9 FLMp 8) (Col: 1an4Dmli						
vu 11L058+7L5L Gh 01	v GL63F: u etRtC	₽06978p7+	L@1LL Dg/b	® 76	bL	16L
E2 01 CS: SolsvHef oyers Ge Merf cr9 C9 FLMp 8) (Col: 1aa0n11i						
v u 11L056p7LL0	v GL63T: u etRtC	p06979p7+	L@1LL Dg/b	1Lp	pL	16L
E20QP: 6 PPowed 5 exsysteVI (hroN & N 8) (Col: 1 anrmmAi						
v u 11L05867L50 VEoECD ocs	v GL3LF: HexamaleEyi dtoDrcD	1830L75979	LG Dg/b	8+@	bL	16L
E20QPF: 6 PPowed 5 exsysteVI (hroN & N 8) (Col: 1 anrmmhi						
vu 11L058+7L5L Gh 01	v GL3LF: HexamaleEyi dtoDncD	1830L75979	LG Dg/b	11.5	bL	16L
EKOAQ2: Free f 9sV3de G9 6 39f rele t Vsv8Per 8) (Col: 1anmaQmi						
v u 11L019L7L+ VEoEODocs	v KL53G: Ftee i CaEn e	1111	LG Dg/b	98@	pL	16L
EKOAC2: Free f 9sV3de C9 6 39f rele t Vsv9Per 8) (Col: 1anmaCD						
vu 11L058+7L16 Gh 56	v KL53G: Ftee i CaEn e		LG Dg/b	D+d	bL	16L
EKOAQ2: Free f 9sV3de G9 6 3Pf rele t Vsv9Per 8) (Col: 1anman0i						
v u 11L058p7LL5 VEoECD ocs	vKL53G: Ftee i CaEn e	1111	LG Dg/b	116	bF	16L
EKOAn2: Solsv (9sV3de B963P relet Vsv9Per 8) (Col: 1anman1i						
vu 11L058+7LL5 Gh 0	vKL5+G: Toyal i GEn e	3p71573	L G Dg/b	D d6	pL	16L
EKOAn2: Solsv(9sV3de B963Prelet Vsv9Per 8) (Col: 1anmanAi						
v u 11L058+7L55 Gh 06M	vKL5+G: Toyal i CaEn e	3p71573	L G Dg/b	рГФ	bL	16L
EKOAn2: Wesk t f 21 6 3PP of 35 Ge (9sV21e B9 6 3Pf rele t VsAPer	8 (Col: 1annanl i					
vu 11L058+7LL5 Gh 0	v KL58G: h eak VRn MossoRarlei CaEn e	1111	LG Dg/b	® +6	bF	16L
EKOAn2: Wesk tf 3d 6 PP Pof 3s Goe (9s Vale B96 Pf relet Vs 49 Per	8 (Col: 1anman4i					
v u 11L058+7L55 Gh 06M	v KL58G: h eak VRn MossoRarlei CaEn e	1111	LG Dg/b	1L3	bL	16L
EK040b: Fvcor3te G9 b(S3rslor 8) (Col: 1anQ4nDi						
vu 11L05L97LL5 VEoECDocs	v KL0LP: Flcotn e	1+98070878	3@ Dg/b	8L®	bL	16L
EK040b: Fvcorthe G9 b(S3rslor 8) (Col: 1anQ4ali						
vu 11L058+7L11 Gh 51	v KLOLP: Flcotn e	1+98070878	3@ Dg/b	⊕06	bF	16L
EK040b: Fvcortde G9 b(S3rslor 8) (Col: 1anQ4aQ						
v u 11L058p7LL5 VEoEODocs	v KL0LP: Flcotn e	1+98070878	3@ Dg/b	-606	bL	16L
EKOCA2: R3r3e sPR CB 6 OPfrele t Vsv9Per 9 (Col: 1an4 A41i						
vu 11L05097L5 VEoECD ocs	v KL3pG: Nnytnje as N	Ш.	LG Dg/b	118	bľ	16L



Matrix Spike (MS) Report

: 59 of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNU vNTVb vVATH W JVNI vW : 51LLp0 VbXvAT PVAK GVWh BAKW Page h otk Bt. et

ilmeEy Pto-eRy

Wcr 7u aytnx: Wt SEH

			Spike	Spike Recovery (%)	Recovery Limits (%)	Limits (%)
Laboratory sample ID Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EKOCA2: R3r3esPR CO 6 OPfrelet VsA Per 8 (Col: 1an4 A4ai						
vu 11L058+7LL5 Gh 0	v KL3pG: Nnytne as N	1111	LG Dg/b	11L	pL	16L
EKOCA2: R3r3e sPR C9 6 OFfrele t Vsv8Per 9 (Col: 1an4ACN						
v u 11L058+7L55 Gh 06M	v KL3pG: Nnytne as N	1111	LG Dg/b	151	pL	16L
EKOCO2: R3r3e 7x2 PR3rsle s PR 8ROxi @ 634 rele t Vs@Per 8 (Col: 1anDmmi	. 8 (Col: 1anDmmi					
vu 11L058+7L5 Gh 0	v KL39G: Nŋtŋe w Nŋtaye as N	ШТ	LG Dg/b	# Noy Meyet DnEe.	pL	16L
EK 0002: R3r3e 7 vc PR3rsle s PR 8RO xi @ 6 OF rele t Vsv8 Per 8) (Col: 1 an Dmmi	. 8 (Col: 1anDmmi					
v u 11L058+7L51 Gh 05M	v KL39G: Nnytnje w Nnytaye as N	1111	LG Dg/b	155	pL	16L
EK0a12 : Hesf 13/e bhoP7 horc P s P b 🖼 d3Pf rele sVsv8Per 👂 🛚	8 (Col: 1an4A4ni					
vu 11L058+7LL5 Gh 0	v KLp1G: AeaRyme Pdos4dotcs as P	<i>IIII</i>	LG Dg/b	115	pL	16L
EK0a12: Hesfl3ye bhoP7horcPsPb @ d3Frele sVsv8Per 8 (8 (Col: 1an4AQli					
vu 11L058+7L55 Gh 06M	v KLp1G: AeaRyme Pdos4dotcs as P	Ш.	LG Dg/b	115	pL	16L
Eb0a4E: 5 svogeVsled t Warhsl ff (oN 7 oc VdP 8) (Col: 1 anD1D1i						
vu 11L058+7LL5 Gh 0	v PLp0: 10 7/MrdlotoeydeEe	p376370	SL µg/b	# 119	30	1L0
	v PLp0: TtrRlotoeydeEe	p97L17+	SL µg/b	116	+2	15L
Eb0a4E: 5 stoge Vsled t @Thsl ff (oN 7 oc VdP 8) (Col: 1 anD1 DC)						
vu 11L058+7L55 Gh 06M	v PLp0: 10 7MRdlotoeydeEe	p376370	5L µg/b	83@	30	1L0
	v PLp0: TtrRdlotoeydeEe	p97L17+	g/bh 15	®p@	+2	15L
Eb0a4F: 5 stoge Vsled tronsi (on 7 oc VdP 8) (Col: 1 and Dii	=					
vu 11L058+7L5 Gh 0	v PLp0:i dlotor eE@Ee	1L879L7p	2Γ μg/b	111	8+	165
Eb0a4F: 5 stoge Vsled t ronsi 3 (on 7 oc VdP 8) (Col: 1anDIDG						
vu 11L058+7L55 Gh 06M	v PLp0:i dlotor eE@Ee	1L879L7p	5L µg/b	98@	8+	165
Eb0n0/0a1: SolsvbelrovecN 59drof srGoVP 8 (Col: 1anD1DAi						
vu 11L058+7LL5 Gh 0	vPL8L:i + 7i 9 FtaRynoE	1111	58L µg/b	118	31	153
Eb0n0/0a1: SolsvbelrovecN 59drof srGoVP 8 (Col: 1anD1D4i						
vu 11L058+7L55 Gh 06M	∨PL8L:i + 7i 9 FtaRynoE	Ш.	58L µg/b	88⊕	31	153
Eb0n0/0a1: SolsvHef oyers Ge 59drof srGoVP uREbM A010 6 rs-I	s-I 8 (Col: 1anD1 DAi					
vu 11L058+7LL5 Gh 0	v PL8L:i + 7i 1L FtaRyoE	1111	9/pd 199	151	pL	16L
Eb0n0/0a1: SolsvHef oyers Ge 59 drof srGoVP uREbM A010 6 rs-I	s-1 8 (Col: 1anD1D4i					
vu 11L058+7L55 Gh 06M	v PL8L:i + 7i 1L FtaRyneE	1111	9/pd 199	910	pL	16L
Eb0m0: BSEXR 8 (Col: 1anD1DAi						
vu 11L058+7LL5 Gh 0	v PL8L: XeE@Ee	p170675	5L µg/b	11L	9+	161
	v PL8L: TolceEe	1L878876	g/ hg/b	1L+	+3	166
8 (S)						
vu 11L058+7L55 Gh 06M	v PL8L: XeE@Ee	p170675	2L µg/b	93@	9+	161
	v PL8L: TolceEe	11878876	5L µg/b	910	+3	166

A Campbell Brothers Limited Company





: 6L of 6L : vu 11L058+ VDeE. DeEy1 : vNI JABNU vNTVb vVATH W JVNI vW : 51LLp0 VbXvAT PVAK GVWh BAKW



ANALYTICAL CHEMISTRY & TESTING SERVICES



Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

f3L	:∨EnmroEDeEyais mmMnoEN eitourEe :IaroihaiNd :4heMjaiiO.cprrEgnaaieIRHUMyraina 3171	.JaroiBvaiNk@aiNeEnmoBloD +61-3-8F49 96L8 +61-3-8F49 96L1	: Vv PN 1999 cJde. uie X(3) aE. Hbc QI c3 requπeDeEy	: 51-HPO-5L11 : L6-NH, -5L11	
: 1 of 3L	 >	: Jar : +6` : +6`	^	.: 51- .: L6-	 3F
Page	bat orayorC I oEyaJy H reIMI	v-Dari TeiepdoEe YaJMD rie	QI bemei	s aye caD pieMOeJemme. RAMLe s aye	VoBofNaDpieMreJenme. VoBofNaDpieMaEaiGMe.
:EM1104286	: vVIROAVN vVTH bvHOTS cIRVIvc : NOSHIRSWHNvc : PBNEXA2 55F3 YAATCIOH, IRUHOCTOH bRH3L11	: . jaDeM@eeM B rz : +61 96871666 : +61 L3 96871844	: 51LL74 HbXvOT PHOK GHc h AOKc :	<u> </u>	: : Nv/L1F/11 I 3
Work Order	lineEy IoEyaJy H∴reNM	v-Dari TeiepdoEe YaJMDrie	ProjeJy c ne	I-A-I EuDter caDpier	Ar. er EuDt er Quoye EuDt er

TdM/reporyMuperNe. eMaECprenmouMrepory(M) wryd ydn/hrefereEJeBOeMuiyMappiCyo yde NaDpie(M) aMMut Dnye. BHii pageMof ydn/hreporydanne t eeEJdeJke. aE. appronne. for reieaN&B

Total ME perpreyme Quainy CI o Eyroi Oepory Jo Eyan EM y de foilown Egin Efor Dayno E:

- HEaidWMMSoi.reg TriDe I oDpinaEJe
- QuairyCl oEyroi ParaDeyer YrequeEJCl oDpiraEle
- Xrref Neydo. cuDDarreM
- cuDDarCof AuyirerM

Environmental Division Melbourne Part of the ALS Laboratory Group

4 h eMeii O. cprf£graie I R HuMyaira 3171 Tei. +61.3-8649 9600 YaxB+61-3-8F49 96L1 www.alsglobal.com

A Campbell Brothers Limited Company



: VVI ROAVNVVTHb VHOTS CI RVI VC 51LL74 HbXv OT PHOK GHc h AOKc : vN11L4586 h ork Ar. er ProjeJy l ine Ey

Analysis Holding Time Compliance

inuyoo EM a.E. reru BNB REfor Dayoo E nM ailwoo promine. re yde MaDpie Jo EyanEer (preMetmanyme) fro D widad yde a Eaid MMM ainquoy wa M yake BB viap Me. permo. yo a Eaid MM repreMeEM EUD ter of .adM fro D MaDpinEg widere Eo for iatorayorC pro. u.g. iea. day and mandaloe, and yole Job pieyone. age of yole iea. Job pieyone. age of yole iea. Itea. age of yole are tanke. of occidentaly on the seal day of the allowers. The seal delimited is a seal of yole in the promine. It is not all the seal delimited in the promine. It is not a seal of the seal delimited in the promine. It is not a seal of the seal delimited in the promine of the seal delimited in the seal of the seal delimited in the seal delimited i Tde followning reporty NuDDarthold extratyone / preparatyone of a Baichold who the page of extratyone or a Baichold a Baichold and the page of extratyone or a Baichold a Baichold and the page of extratyone or a Baichold a Baichold and the page of extratyone or a Baichold a Baichold and the page of extratyone or a Baichold and a Baichold and the page of extratyone or a Baichold and a Baichold a exyraJyoE / .rgeNynoE n/ represe. or perno. frod exyraJyooE / .rgeNynoE widere ydn/n m/ preNeEyB Yor JoDpoNnye NaDpieMynoRe nabynoE / .rgeNynoE n/ repenynoE not perno. frod exyraJyooE / .rgeNynoE / .rgeNy cuDDarCof AuyrerMB Soi. rEg y De Morselly a Easige. M (extilu. rEg eiugrangeM) mand autor. rEg to yde a EasigeM tereg eependree, of yde reMilinyEg MoilinyeB Yor EoE-moilayine a EasigeMU yde doi. rEg ynde a wyd yde Mungelly a Easige doi. rEg ynde equimanieEy Moni Deydo. B TdeMe Moni doi. rEg yndeM are: ArgaEalM (14. a CM); NerJund (58. a CM) & oyder DeyaiM (18L. a CM)B H reJon. e. treaud yderefore oeM Eoy guara Eyee a treadd for aii Eo E-moiayie para DeyerMB

Nayrx: WATER					v naiuayoE	x = Soi. nEg ynDe	v maiuayno E: x = Soi. nEg ynDe treaJd; ✓ = h nydnEdoi. nEg ynDeB	doi.nEgynDeB
Method	35	Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005: pH								
Clear Plastic Bottle - Natural								
Gh 9U	Gh 15 Gh 15	19-APR-2011	!	-	1	27-APR-2011	19-HPO-5L11	×
Clear Plastic Bottle - Natural								
Gh 3U	Gh 4U 20.	20-APR-2011	ł	1	-	27-APR-2011	5L-HPO-5L11	×
Gh 1LU								
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41U							
Gh 43s U	Gh 44s U							
s0P1U	cPbR1U							
sobau	cPbR3U							
Gh 19U	s 0P4							
Clear Plastic Bottle - Natural								
Gh 45s U	cPbR4 21.	21-APR-2011	1	1		27-APR-2011	51-HPO-5L11	×



Page h ork Ar. er

lineEy ProjeJy

: 3 of 3L : vN11L4586 : vVI @AVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc

Nayrx: WATER					v maiuayno E	× = Soi. nEg ynDe	v maiuayno E:× = Soi.nEgynDetreaJd; ✓ = hŋolnEdoi.nEgynDeB	doi.nEg ynDeB
Method		Sample Date	Ex	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids								
Clear Plastic Bottle - Natural Gh 9U	Gh 15	19-APR-2011	!	-	-	21-APR-2011	56-HPO-5L11	>
Clear Plastic Bottle - Natural Gh 39U	Gh 4L	20-APR-2011	!	-		21-APR-2011	57-HPO-5L11	>
Clear Plastic Bottle - Natural								
Gh 3U	Gh 4U	20-APR-2011	1		1	27-APR-2011	57-HPO-5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 510	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 41U							
Gh 43s U	Gh 44s U							
soP1U	cPbR1U							
s 0 P3U	cPbR3U							
Gh 19U	s 0 P4							
Clear Plastic Bottle - Natural								
Gh 45s U	cPbR4	21-APR-2011	1	-		27-APR-2011	58-HPO-5L11	>
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural								
Gh 9U	Gh 15	19-APR-2011	ŀ	L3-NH, -5L11	-	28-APR-2011	L3-NH, -5L11	>
Clear Plastic Bottle - Natural								
Gh 3U	Gh 4U	20-APR-2011	i	L4-NH, -5L11	-	28-APR-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41U							
Gh 43s U	Gh 44s U							
s0P1U	cPbH1U							
soP3U	cPbR3U							
Gh 19U	s 0P4							
Clear Plastic Bottle - Natural								
Gh 45s U	cPbR4	21-APR-2011	ŀ	LF-NH, -5L11		28-APR-2011	LF-NH, -5L11	>



: 4 of 3L : vN11L4586 : vVI @AVNvVTHb vHOTS cI RVI vc : 51LL74 HbXvOT PHOK GHc h AOKc

Nayrx: WATER					v maiuayoE	× = Soi.nEgynDe	v maiuayno E. × = Soi. nEg ynDe treaJd; ✓ = h nydnEdoi.nEg ynDeB	doi. nEg ynDeB
Method		Sample Date	Ex	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural								
Gh 9U	Gh 15	19-APR-2011	1	17-NH, -5L11	-	30-APR-2011	17-NH, -5L11	>
Clear Plastic Bottle - Natural								
Gh 3U	Gh 4U	20-APR-2011	1	18-NH, -5L11	!	30-APR-2011	18-NH, -5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41U							
Gh 43s U	Gh 44s U							
soP1U	cPbR1U							
sopsu	сРЬЯЗ							
Gh 19U	s 0 P 4							
Clear Plastic Bottle - Natural								
Gh 45s U	cPbH4	21-APR-2011	I	19-NH, -5L11		30-APR-2011	19-NH, -5L11	>
ED045G: Chloride Discrete analyser								
Clear Plastic Bottle - Natural								
Gh 9U	Gh 15	19-APR-2011	!	17-NH, -5L11	-	30-APR-2011	17-NH, -5L11	>
Clear Plastic Bottle - Natural								
Gh 3U	Gh 4U	20-APR-2011	1	18-NH, -5L11	!	30-APR-2011	18-NH, -5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41U							
Gh 43s U	Gh 44s U							
s0P1U	cPbR1U							
sopsu	сРъязи							
Gh 19U	s 0 P 4							
Clear Plastic Bottle - Natural								
Gh 45s U	cPbR4	21-APR-2011	ŀ	19-NH5L11		30-APR-2011	19-NH5L11	<u>`</u>
								•



: F of 3L : vN11L4586 : vVI @AVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc

Naym: WATER					v naiuayoE	×=Soi.nEgynDe1	v maiuayno E:× = Soi. nEg ynDe treaJd; ✓ = h nydnEdoi.nEg ynDeB	doi.nEg ynDeB
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Unfiltered; Lab-acidified								
Gh 1FU	Gh 36U	20-APR-2011	1	18-NH, -5L11	-	29-APR-2011	18-NH, -5L11	>
Gh 39U	Gh 410							
GN 438 U	GN 448 U							
SOP10 SOP4								
Clear Plastic Bottle - Unfiltered; Lab-acidified								
Gh 45s		21-APR-2011	1	19-NH, -5L11		29-APR-2011	19-NH, -5L11	>
Clear Plastic Bottle - Unspecified; Lab-acidified							:	,
Gh 9U	Gh 15	19-APR-2011	1	17-NH, -5L11	-	29-APR-2011	17-NH, -5L11	>
Clear Plastic Bottle - Unspecified; Lab-acidified								
Gh 3U	Gh 4U	20-APR-2011	1	18-NH, -5L11		29-APR-2011	18-NH, -5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 16U	Gh 51U							
Gh 55U	Gh 53U							
Gh 540	Gh 5FU							
Gh 570	Gh 4LU							
s0 P3U	cPbH3U							
SI US								
Clear Plastic Bottle - Unspecified; Lab-acidified		4				4		•
		21-APR-2011		19-NH, -5L11	-	29-APR-2011	19-NH, -5L11	>
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Unfiltered; Lab-acidified								
Gh 1FU	Gh 36U	20-APR-2011	ı	17-AI T-5L11	-	28-APR-2011	17-AI T-5L11	>
Gh 39U	Gh 41U							
Gh 43s U	Gh 44s U							
s 0 P 1 U	CPbR1U							
s0P4								
Clear Plastic Bottle - Unfiltered; Lab-acidified		24 ABB 2044		1007	ļ	00 000	10 01	`
Clear Plastic Bottle - Unspecified: 1 ah.acidified		1107-117-17				1107-1110-07		>
Gh 9U	Gh 15	19-APR-2011	ŀ	16-AI T-5L11	-	28-APR-2011	16-AI T-5L11	>
Clear Plastic Bottle - Unspecified; Lab-acidified								•
Gh 3U	Gh 4U	20-APR-2011	I	17-AI T-5L11		28-APR-2011	17-AI T-5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 16U	Gh 51U							
Gh 55U	Gh 53U							
Gh 54U	Gh 5FU							
Gh 57U	Gh 4LU							
s0P3U	cPbR3U							
81 US								
Clear Plastic Bottle - Unspecified; Lab-acidified		400000		10 04		200 004	10 1 1 51 11	_
4 10 10		21-APR-2011	1	18-AI I-5L11		28-APR-2011	18-AI I-5LII	>

A Campbell Brothers Limited Company



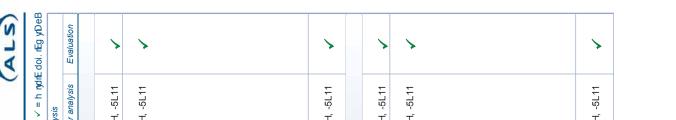
: 6 of 3L : vN11L4586 : vVI RDAVNvVTHb vHOTS cI RVI vc : 51LL74 HbXvOT PHOK GHc h AOKc

Nayn: WATER					v naiuayo E	x = Soi. nEg ynDe	v maiuayno E 🗴 = Soi. nEg ynDe treaJd; ✓ = h nydnEdoi. nEg ynDe B	doi. nEg ynDeB
Method		Sample Date	Exi	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Unspecified; Lab-acidified				i	,		i	,
OKCHIV-4		21-APR-2011	28-APR-2011	18-AI T-5L11	>	29-APR-2011	18-AI T-5L11	>
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural Gh 15		19-APR-2011	l	17-NH, -5L11		03-MAY-2011	17-NH, -5L11	>
Clear Plastic Bottle - Unfiltered; Lab-acidified								
Gh 1FU	Gh 36U	20-APR-2011	ŀ	L4-NH, -5L11	-	03-MAY-2011	L4-NH, -5L11	>
Gh 39U	Gh 41U							
Gh 43s U	Gh 44s U							
s 0 P1U	cPbR1U							
SUP4								
Clear Plastic Bottle - Unfiltered; Lab-acidified								
Gh 45s		21-APR-2011	1	LF-NH, -5L11	-	03-MAY-2011	LF-NH, -5L11	>
Clear Plastic Bottle - Unspecified; Lab-acidified								
6 HD		19-APR-2011	1	17-NH, -5L11	-	03-MAY-2011	17-NH, -5L11	>
Clear Plastic Bottle - Unspecified; Lab-acidified								
Gh 3U	Gh 4U	20-APR-2011	ŀ	18-NH, -5L11	-	03-MAY-2011	18-NH, -5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 16U	Gh 51U							
Gh 55U	Gh 53U							
Gh 54U	Gh 5FU							
Gh 57U	Gh 4LU							
s 0 P3U	cPbR3U							
Gh 19								
Clear Plastic Bottle - Unspecified; Lab-acidified								
cPbR4		21-APR-2011	1	19-NH, -5L11		03-MAY-2011	19-NH, -5L11	>
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Unspecified; Lab-acidified		24_ADD_2014			!	03-MAV-2014	10,NH	
1		1107-UJW-17	!			1107-1 WIM-CO	- 12- '- 11-C-	>



: 7 of 3L : vN11L4586 : vVI ROAVN vVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHC h A OKc

Nayrx: WATER					v naiuayo E	× = Soi.nEgynDe	v maiuayno E×=Soi.nEgynDetreaJd; ✓=hnydnEdoi.nEgynDeB	doi.nEg ynDeB
Method		Sample Date	Ex	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH Gh 9U	Gh 15	19-APR-2011	!			02-MAY-2011	17-NH, -5L11	>
Clear Plastic Bottle - NaOH								
Gh 3U	Gh 4U	20-APR-2011	!	-	!	02-MAY-2011	18-NH, -5L11	>
Gh 1LU	Gh 11U							•
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41U							
Gh 43s U	Gh 44s U							
s 0 P 1 U	cPbR1U							
s 0 P3U	c Pbr 3U							
OB/CHTV-311	191 d.D.							
00 00 00 00 00 00 00 00 00 00 00 00 00								
Clear Plastic Bottle - NaOH								,
Gn 458 U	CTD740	21-APR-2011	1	-		02-MAY-2011	19-NH, -5L11	>
ON C II I V - 4								
EK025G: Free cyanide by Discrete Analyser								
White Plastic Bottle-NaOH								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	02-MAY-2011	L3-NH, -5L11	>
White Plastic Bottle-NaOH								
Gh 3U	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	02-MAY-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U				•			
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41U							
Gh 43s U	Gh 44s U							
s 0 P 1 U	cPbR1U							
soP3U	cPbR3U							
OR/cHTv-3U	Gh 19U							
s 0 P4								
White Plastic Bottle-NaOH								
Gh 45s U	cPbR4U	21-APR-2011	02-MAY-2011	LF-NH5L11	>	02-MAY-2011	LF-NH5L11	`
OBV: HTV-4				i i	•			•
† • • • • • • • • • • • • • • • • • • •								



A Campbell Brothers Limited Company

: vN11L4586 : vVI POAVNvVTHb vHOTS cI PeVI vc : 51LL74 HbXvOT PHOK GHc h AOKc : 8 of 3L Page h ork Ar. er l ine Ey ProjeJy

v maiuayno E × = Soi. nEg ynDe treaJd; ✓ = h nydnEdoi. nEg ynDeB Nayrx: WATER M C C

Method								
		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026G: Total Cyanide By Discrete Analyser	37							
White Plastic Bottle-NaOH								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	03-MAY-2011	L3-NH, -5L11	>
White Plastic Bottle-NaOH								
Gh 3U	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	03-MAY-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U				•			•
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41U							
(3h 43s L)	(3h 44s L)							
s 0 D 1 1 1	1							
0.000								
SUPSU Services	CHOHO							
OP/CHTV-3U	Gh 19U							
s 0 P4								
White Plastic Bottle-NaOH								
Gh 45s U	cPbR4U	21-APR-2011	02-MAY-2011	LF-NH, -5L11	>	03-MAY-2011	LF-NH, -5L11	>
OPVcHTv-4					,			
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser	y Discrete Analyser							
White Plastic Bottle-NaOH								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	02-MAY-2011	L3-NH, -5L11	>
White Plastic Bottle-NaOH								
Gh 3U	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	02-MAY-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U				•		•	•
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41U							
Gh 43s U	Gh 44s U							
soP1U	cPbR1U							
sopsu	cPbR3U							
OP/c HTv-3U	Gh 19U							
s 0 P 4								
White Plastic Bottle-NaOH								
Gh 45s U	cPbR4U	21-APR-2011	02-MAY-2011	LF-NH, -5L11	>	02-MAY-2011	LF-NH, -5L11	>
OPVc HTv-4								



: 9 of 3L : vN11L4586 : vVI RDAVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc

Page h ork Ar. er

lineEy ProjeJy

Nayrx: WATER					v maiuayoo E	x = Soi. nEg ynDe	v maiuayno E: x = Soi. nEg ynDe treaJd; ✓ = h nydnEdoi. nEg ynDeB	doi.nEgynDeB
Method		Sample Date	EX	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural								
Gh 9U	Gh 15	19-APR-2011	1	17-NH, -5L11		28-APR-2011	17-NH, -5L11	>
Clear Plastic Bottle - Natural								
Gh 3U	Gh 4U	20-APR-2011	ŀ	18-NH, -5L11	1	28-APR-2011	18-NH, -5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41U							
Gh 43s U	Gh 44s U							
s0P1U	cPbR1U							
s 0 P3U	cPbR3U							
Gh 19U	s 0P4							
Clear Plastic Bottle - Natural								
Gh 45s U	cPbR4	21-APR-2011	ŀ	19-NH, -5L11		28-APR-2011	19-NH, -5L11	>
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural								
Gh 9U	Gh 15	19-APR-2011	ł	51-HPO-5L11	-	21-APR-2011	51-HPO-5L11	>
Clear Plastic Bottle - Natural								
Gh 3U	Gh 4U	20-APR-2011	i	55-HPO-5L11	-	21-APR-2011	55-HPO-5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41U							
Gh 43s U	Gh 44s U							
s0P1U	cPbR1U							
sopsu	cPbR3U							
Gh 19U	s 0P4							
Clear Plastic Bottle - Natural								
Gh 45s U	cPbR4	21-APR-2011	1	53-HPO-5L11	-	21-APR-2011	53-HPO-5L11	>



Page h ork Ar. er lineEy ProjeJy

: 1L of 3L : vN11L4586 : vVI RDAVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc

Nayrx: WATER					v maiuayno E	x = Soi. nEg ynDe	v maiuayno E 🗴 = Soi. nEg ynDe treaJd; ✓ = hrydnEdoi. nEg ynDe B	doi. nEg ynDeB
Method		Sample Date	Ü	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser	le Analyser							
Clear Plastic Bottle - Sulfuric Acid								
Gh 9U	Gh 15	19-APR-2011	1	17-NH, -5L11	-	04-MAY-2011	17-NH, -5L11	>
Clear Plastic Bottle - Sulfuric Acid								
Gh 3U	Gh 4U	20-APR-2011	ŀ	18-NH, -5L11	1	04-MAY-2011	18-NH, -5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41U							
Gh 43s U	Gh 44s U							
s 0 P 1 U	cPbH1U							
soban	cPbR3U							
Gh 19U	s 0 P4							
Clear Plastic Bottle - Sulfuric Acid								
Gh 45s U	cPbR4	21-APR-2011	ŀ	19-NH, -5L11	!	04-MAY-2011	19-NH, -5L11	>
EK071G: Reactive Phosphorus as P by discrete analyser	alyser							
Clear Plastic Bottle - Natural								
Gh 9U	Gh 15	19-APR-2011	ŀ	51-HPO-5L11		21-APR-2011	51-HPO-5L11	>
Clear Plastic Bottle - Natural								
Gh 3U	Gh 4U	20-APR-2011	ı	55-HPO-5L11	-	21-APR-2011	55-HPO-5L11	>
Gh 1LU	Gh 11U							•
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41U							
Gh 43s U	Gh 44s U							
s 0 P 1 U	cPbR1U							
sobau	cPbR3U							
Gh 19U	s 0 P 4							
Clear Plastic Bottle - Natural								
Gh 45s U	CPbR4	21.APR.2011	i	53-HPO-51 11	-	21.APR.2011	53-HPO-51 11	`
		1107-1114-17		00 00 10 10		1		>



Page h ork Ar. er lineEy ProjeJy

: 11 of 3L : vN11L4586 : vVI RDAVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc

Nayrx: WATER					v maiuayno E	× = Soi. nEg ynDe	v maiuayno E×=Soi.nEg ynDetreaJd; ✓=hrydnEdoi.nEg ynDeB	doi. nEg ynDeB
Method		Sample Date	ĒX	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK085M: Sulfide as S2-								
Clear Plastic Bottle - Zinc Acetate/NaOH	Gh 15	19.ADR.2011	į	ļ	!	27.APR.2011	56_HPO_5 11	3
Clear Plastic Bottle - Zinc Acetate/NaOH							- - - - - - -	\$
Gh 3U	Gh 4U	20-APR-2011	!	-		27-APR-2011	57-HPO-5L11	>
Gh 1LU	Gh 11U							•
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 340							
2-15 JE 45	0 to 100							
Gh 4LU	Gh 41U							
Gh 43s U	Gh 44s U							
s o P 1 U	cPbR1U							
sopsu	cPbR3U							
OP/c HTv-3U	Gh 19U							
s 0 P 4								
Clear Plastic Bottle - Zinc Acetate/NaOH								
Gh 45s U	cPbR4U	21-APR-2011	!	-	1	27-APR-2011	58-HPO-5L11	`
OR/cHTv-4								•
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	02-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
ORV C HTV-5		19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	03-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 3U	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	02-MAY-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U							`
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 43s U	Gh 44s U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	03-MAY-2011	L4-NH, -5L11	>
s 0 P 1 U	cPb#1U							
s 0 P3U	cPbR3U							
ONCHTV-3U	TOR3U							
GB 190	800%							
Amber VOC Vial- NaHSO4 or H2SO4				i	,		i	,
Gh 45s U	CPDK4U	21-APR-2011	02-MAY-2011	LF-NH, -5L11	>	03-MAY-2011	LF-NH, -5L11	>
04-710350	4 4							

A Campbell Brothers Limited Company



: 15 of 3L : vN11L4586 : vVI ROAVN vVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc Page h ork Ar. er ProjeJy I ine Ey

	ŀ
	ľ
쏦	
WATER	
ayrx:	
ž	

יאמאועי איר ובוע								
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074B: Oxygenated Compounds								
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	02-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
OPVc HTv-5		19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	03-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 3U	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	02-MAY-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U				•			
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 43s U	Gh 44s U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	03-MAY-2011	L4-NH, -5L11	>
s o P 1 U	cPbR1U				•			•
soP3U	cPbR3U							
OR/c HTv-3U	TORB3U							
Gh 19U	s 0 P 4							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 45s U	cPbR4U	21-APR-2011	02-MAY-2011	LF-NH, -5L11	>	03-MAY-2011	LF-NH, -5L11	>
OP/cHTv-4U	TOR94				٠			



: 13 of 3L : vN11L4586 : vVI @AVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc

Page h ork Ar. er

ProjeJy l ine Ey

Nayrx: WATER				v naiuayoE	×=Soi.nEgynDe	v maiuayno E.×=Soi.nEgynDetreaJd; ✓=hŋdnE
Method	Sample Date	Ext	raction / Preparation			Analysis
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis

Nayrx: WATER					v maiuayo E	x = Soi.nEgynDe	v maiuayno E. × = Soi. nEg yn DetreaJd; ✓ = hrydnEdoi.nEgyn DeB	doi. nEg ynDeB
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074C: Sulfonated Compounds								
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	02-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
OR/cHTv-5		19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	03-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 3U	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	02-MAY-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 43s U	Gh 44s U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	03-MAY-2011	L4-NH, -5L11	>
s0P1U	cPbR1U							
sOP3U	cPbH3U							
ORVc HTv-3U	TOR3U							
Gh 19U	s 0 P 4							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 45s U	cPbR4U	21-APR-2011	02-MAY-2011	LF-NH, -5L11	>	03-MAY-2011	LF-NH, -5L11	>
ORVCHTv-4U	TOR4							



: 14 of 3L : vN11L4586 : vVI @AVNvVTHb vHOTS cI RVI vc : 51LL74 HbXvOT PHOK GHc h AOKc Page h ork Ar. er lineEy ProjeJy

Nayrk: WATER					v maiuayno E	x = Soi. nEg ynDe	v maiuayno E: × = Soi. nEg ynDe treaJd; ✓ = h nydnEdoi. nEg ynDeB	doi.nEgynDeB
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074D: Fumigants								ř
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	02-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
OR/cHTv-5		19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	03-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 3U	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	02-MAY-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U				•			
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 43s U	Gh 44s U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	03-MAY-2011	L4-NH, -5L11	>
s0P1U	cPbR1U							•
soP3U	cPbR3U							
OR/cHTv-3U	TOR3U							
Gh 19U	s 0 P 4							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 45s U	cPbR4U	21-APR-2011	02-MAY-2011	LF-NH, -5L11	>	03-MAY-2011	LF-NH, -5L11	>
OR/c HTv-4U	TORP4				•			



: 1F of 3L : vN11L4586 : vVI RDAVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc Page h ork Ar. er

lineEy ProjeJy

Nayrx: WATER					v naiuayoE	x = Soi. nEg ynDe	v maiuayno E: × = Soi. nEg ynDe treaJd; ✓ = h nydnEdoi.nEg ynDe B	doi. nEg ynDeB
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	02-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
OR/cHTv-5		19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	03-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 3U	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	02-MAY-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 43s U	Gh 44s U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	03-MAY-2011	L4-NH, -5L11	>
s0P1U	cPbR1U							
s 0 P3U	cPbR3U							
OR/c HTv-3U	TORB3U							
Gh 19U	s 0P4							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 45s U	cPbR4U	21-APR-2011	02-MAY-2011	LF-NH, -5L11	>	03-MAY-2011	LF-NH, -5L11	>
OR/cHTv-4U	TOIR4							,



: 16 of 3L : vN11L4586 : vVI RDAVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc Page h ork Ar. er lineEy ProjeJy

Nayrk: WATER					v naiuayoE	x = Soi.nEgynDe1	v maiuayno E:× = Soi.nEgynDetreaJd; ✓ = hŋolnEdoi.nEgynDeB	doi. nEg ynDeB
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	02-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
ORVc HTv-5		19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	03-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 3U	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	02-MAY-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 43s U	Gh 44s U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	03-MAY-2011	L4-NH, -5L11	>
s o P 1 U	cPbR1U				•			
sobau	cPbR3U							
OP/c HTv-3U	TORB3U							
Gh 19U	s 0P4							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 45s U	cPbR4U	21-APR-2011	02-MAY-2011	LF-NH, -5L11	>	03-MAY-2011	LF-NH, -5L11	>
OPVc HTv-4U	TOR94							



: 17 of 3L : vN11L4586 : vVI RDAVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc Page h ork Ar. er lineEy ProjeJy

Nayrx: WATER					v naiuayo	x = Soi. nEg ynDe	v maiuayno E: × = Soi. nEg ynDe treaJd; ✓ = h nydnEdoi. nEg ynDeB	doi. nEg ynDeB
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074G: Trihalomethanes								
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	02-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
OR/cHTv-5		19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	03-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 3U	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	02-MAY-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U							•
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 43s U	Gh 44s U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	03-MAY-2011	L4-NH, -5L11	>
s0P1U	cPbR1U							
soP3U	cPbR3U							
OR/c HTv-3U	TORB3U							
Gh 19U	s 0 P 4							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 45s U	cPbR4U	21-APR-2011	02-MAY-2011	LF-NH, -5L11	>	03-MAY-2011	LF-NH, -5L11	>
OR/CHTv-4U	TOR94							



: 18 of 3L : vN11L4586 : vVI @AVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc Page h ork Ar. er

l ine Ey ProjeJy

Nayrx: WATER					v naiuayo E	× = Soi. nEg ynDe	v maiuayno E: x = Soi. nEg ynDe treaJd; ✓ = h nydnEdoi. nEg ynDeB	doi.nEgynDeB
Method		Sample Date	Ex	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	S							
Amber Glass Bottle - Unpreserved								
Gh 9U	Gh 15U	19-APR-2011	21-APR-2011	56-HPO-5L11	>	04-MAY-2011	L6-W0V-5L11	>
OR/cHTv-5					•			•
Amber Glass Bottle - Unpreserved								
Gh 3U	Gh 4U	20-APR-2011	21-APR-2011	57-HPO-5L11	>	04-MAY-2011	L6-V0 V-5L11	>
Gh 1LU	Gh 11U				•			
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41							
Amber Glass Bottle - Unpreserved								
Gh 54U	Gh 5FU	20-APR-2011	27-APR-2011	57-HPO-5L11	>	04-MAY-2011	L6-W0V-5L11	>
Gh 43s U	Gh 44s U				•			
s0P1U	cPbR1U							
sopsu	cPbR3U							
OR/cHTv-3U	TOR3U							
Gh 19U	s 0 P4							
Amber Glass Bottle - Unpreserved								
Gh 45s U	cPbR4U	21-APR-2011	27-APR-2011	58-HPO-5L11	>	04-MAY-2011	L6-W0V-5L11	>
OR/c HTv -4U	TOR4				•			



Page h ork Ar. er lineEy ProjeJy

: 19 of 3L : vN11L4586 : vVI RDAVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc

Nayrk: WATER					v maiuayno E	x = Soi. nEg ynDe	v maiuayno E× = Soi. nEg ynDe treaJd; ✓ = h nydnEdoi.nEg ynDe B	doi. nEg ynDeB
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved		000	24 400	56 UDO 51 44	•	MAY 2014	1 6 VBV 51 44	`
Amber Glace Bottle - Hansserved		1102-414-61	1102-414-12		>	1107-1 WM-50		>
Gh 9U	Gh 15	19-APR-2011	21-APR-2011	56-HPO-5L11	>	04-MAY-2011	31-NH, -5L11	>
Amber Glass Bottle - Unpreserved								
Gh 3U	Gh 4U	20-APR-2011	21-APR-2011	57-HPO-5L11	>	04-MAY-2011	31-NH, -5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 510	Gh 55U							
Gh 53U	Gh 5/U							
G1 300 G1 4 I.I	G1 390 Gh 41							
Lower Care Date Comment	5							
Alliber Glass boune - Onpreserved	1 27 40	4 00	4 700	67 UDO 51 44	`	2 × × × × × × × × × × × × × × × × × × ×	1 6 VM V F 1 4 4	`
0.000		20-APR-2011	21-APR-2011	11 JC-04L-16	>	1102-TAM-60	117C- / M/-O7	>
	CI DISTO							
30 F30								
04 C I I V - 30	0 P4							
Amba Calaba Data I alama a calaba a cal								
Ch 5411	15 45 15 45	20 ADD 2011	27 ABB 2011	57 HDO 51 11	`	0.4 MAY 2044	1 6 VAV. 51 11	`
	5	20-AFR-2011	41-APR-2011	11-0-0-LI-76	>	04-IVIA T-2011	LO-V@ V-5L I	>
Amber Glass Bottle - Unpreserved								
Gh 45s U	CPBM4U	21-APR-2011	27-APR-2011	58-HPO-5L11	>	03-MAY-2011	L6-V0 V-5L11	>
ORCHIV-40	IO录4							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	02-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
OP/cHTv-5		19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	03-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 3U	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	02-MAY-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U							
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 43s U	Gh 44s U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	03-MAY-2011	L4-NH, -5L11	>
s0P1U	cPb47U							
s 0 P3U	cPbH3U							
OR/CHTV-3U	TORSU							
Gh 19U	s 0 P 4							

A Campbell Brothers Limited Company



: 5L of 3L : vN11L4586 : vVI @AVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc Page h ork Ar. er

limeEy ProjeJy

Nayrx: WATER					v naiuayo E	🗴 = Soi. nEg ynDe t	v maiuayno E× = Soi. nEg ynDetreaJd; ✓ = h nydnEdoi. nEg ynDeB	doi. rEg yrDeB
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Date extracted Due for extraction Evaluation Date analysed Due for analysis Evaluation	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons - Continued								
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 45s U	cPbR4U	21-APR-2011	21-APR-2011 02-MAY-2011 LF-NH, -5L11	LF-NH, -5L11	>	03-MAY-2011 LF-NH, -5L11	LF-NH, -5L11	>
OR/cHTv-4U	TOR94							•



Page h ork Ar. er

: 51 of 3L : vN11L4586 : vVI @AVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc

limeEy ProjeJy

Nayn: WATER					v naiuayoE	× = Soi. nEg ynDe	v maiuayno E×= Soi. nEg ynDe treaJd; ✓= h nydnEdoi. nEg ynDeB	doi. nEg ynDeB
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft	aft							
Amber Glass Bottle - Unpreserved OR/CHTV-5		19.APR.2011	21.APR.2011	56-HPO-51 11	Y	03-MAY-2011	16-V0V-5111	`
Bottle - Unpreserved	7.0			0 0	`		7	`
	2	19-APR-2011	Z1-APR-Z011	20-DHD-9C	>	04-MAT-2011	3 I-IN L 2L I I	>
Amber class bottle - Unpreserved		4 60	4	7	`	7700 27011	7	`
	04 TO	20-APR-2011	21-APK-2011	5/-HPO-5L11	>	04-MAY-2011	31-NH, -5L11	>
	Gh 141							
	Gh 16U							
	GH 55U							
	Gh 57U							
Gh 36U	Gh 39U							
	1+ -							
iss Bottle - Unpreserved								
	Gh 44s U	20-APR-2011	27-APR-2011	57-HPO-5L11	>	03-MAY-2011	L6-V0 V-5L11	>
	CT0X10							
	CPBH 3U							
v-3U	TORESU							
	s 0 P4							
ass Bottle - Unpreserved								
Gh 54U Gr	Gh 5F	20-APR-2011	27-APR-2011	57-HPO-5L11	>	04-MAY-2011	L6-V0 V-5L11	>
Amber Glass Bottle - Unpreserved								
	cPbR4U	21-APR-2011	27-APR-2011	58-HPO-5L11	>	03-MAY-2011	L6-V0 V-5L11	>
OPVc HTv-4U	TOR94							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	02-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
ORVc HTv-5		19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	03-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	02-MAY-2011	L4-NH, -5L11	>
	Gh 11U							
	Gh 14U							
	Gh 16U							
	Gh 55U							
	Gh 54U							
	Gh 57U							
	Gh 39U							
	T 4.							
C Vial- NaHSO4 or H2SO4				i	,		i	,
GI 4580	G= 448 C	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	03-MAY-2011	L4-NH, -5L11	>
V-311								
	S 0 P 4							

A Campbell Brothers Limited Company



: 55 of 3L
: vN 11L4586
: vVI ROAVNvVTHb vHOTS cI RVI vc Page h ork Ar. er

: vVI ROAVN vVTHb vHOTS o	: 51LL74 HbXv OT PHOK GHc	
l ireEy	ProjeJy	

Nayrx: WATER					v naiuayoE	x = Soi. nEg ynDe	v maiuayno E: × = Soi. nEg ynDe treaJd; ✓ = h nydnEdoi.nEg ynDe B	doi. nEg ynDeB
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft - Continued	PM 2010 Draft - Continued							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 45s U	cPbH4U	21-APR-2011	02-MAY-2011	LF-NH, -5L11	>	03-MAY-2011	LF-NH, -5L11	>
OR/cHTv-4U	TOIP4							
EP080: BTEXN								
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 9U	Gh 15	19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	02-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
OR/cHTv-5		19-APR-2011	02-MAY-2011	L3-NH, -5L11	>	03-MAY-2011	L3-NH, -5L11	>
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 3U	Gh 4U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	02-MAY-2011	L4-NH, -5L11	>
Gh 1LU	Gh 11U				•			
Gh 13U	Gh 14U							
Gh 1FU	Gh 16U							
Gh 51U	Gh 55U							
Gh 53U	Gh 54U							
Gh 5FU	Gh 57U							
Gh 36U	Gh 39U							
Gh 4LU	Gh 41							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 43s U	Gh 44s U	20-APR-2011	02-MAY-2011	L4-NH, -5L11	>	03-MAY-2011	L4-NH, -5L11	>
s o P 1 U	cPbR1U				•			
soP3U	cPbR3U							
OR/c HTv-3U	TOR3U							
Gh 19U	s 0 P 4							
Amber VOC Vial- NaHSO4 or H2SO4								
Gh 45s U	cPbR4U	21-APR-2011	02-MAY-2011	LF-NH, -5L11	>	03-MAY-2011	LF-NH, -5L11	>
OR/c HTv-4U	TOR94				,			



 Page
 : 53 of 3L

 h ork Ar. er
 : vN11L4586

 l ireEy
 : vVI RDAVNv

 ProjeJy
 : 51LL74 HbXv

: VI ROAVNVTHB VHOTS CI RVI VC

: vVI ROAVN vVTHB v HOTS cI RVI vc : 51LL74 HbXv OT PHOK GHC h A OKC

Quality Control Parameter Frequency Compliance

Tde foilowning report/MuddentequeEJCofiat orayorCQI Maddie winding winding to a EaiQydai io (My information) in the mode of th

Nayrk: WATER

v maiuayovE: x = QuainyCl oEyoi frequeEJCEoywnydrE MρeJrínJayovE; ✓ = QuainyCl oEyoi frequeEJCwnydrE MρeJrfnJayovEB

				,			
QuainCl oEyroi caDpie TQpe		Cor	nnt		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
bat orayorCs upinJayeM(s 0 P)							
HikairĒŋCt CPI Tıyrayor	vsL37-P	ч	44	11.4	10.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
diorn e t Cs nMlreye HEaiON€r	vs L4FG	9	F6	10.7	10.0	>	c Jde. uie X(3) aE. Hbc QI
smikolome. NerJurCtCYPN.c	v GL3FY	4	31	12.9	10.0	>	VvPN 1999 cJde.uie X(3) aE. Hbc QI c3 requmeDeEy
s n/mobine. Neyail/It CR P-Nc - curye H	v GL5LH-Y	4	31	12.9	10.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requπeDeEy
Yiuorn e t CPI Tryrayor	v KL4LP	ш	43	11.6	10.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
Yree IV tCsmWareye HEai ONer	v KL5FG	9	9	10.7	10.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requ≡eDeEy
SexanaieEyIdroDnuD-smMoline.	v GLFLY	4	37	10.8	10.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
Najorlayoo⊟M-snMwoinne.	vsL93Y	9	9	10.7	10.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requ≡eDeEy
Vnynnye a E. Vnyraye a MV (VAx) t Cs nhWlreye HEai OWer	v KLF9G	4	31	12.9	10.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requ≡eDeEy
Vnynye aMV t CsnWlreye HEai Ower	v KLF7G	9	47	12.8	10.0	>	V∨PN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
PHS/PdeEoiM(GI/Nc-cRN)	v PL7F(c RN)	_	16	6.3	10.0	×	V∨PN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
pS	v HLLF	4	3F	11.4	10.0	>	c Jde. uie X(3) aE. Hbc QI
OeaJynnne PdoMpdoruMaMP-XCsnMulreye HEaiGNer	v KL71G	4	37	10.8	10.0	>	c Jde. uie X(3) aE.
cuifaye (Turt n nDeynd) aMcA4 5-t Cs nMreye HEaiONer	vsL41G	4	4L	10.0	10.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
c uifn e aMc 5-	v KL8F	4	36	11.1	10.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
Toyai I CaEn e XCs nMreye HEaiONer	v KL56G	4	33	12.1	10.0	>	V∨PN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
Toyais nMMbine. coin M(Sngd benrei)	v HL1FS	Н	44	11.4	10.0	>	V∨PN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
Toyai NerJurCt CYRNc	v GL3FT	5	15	16.7	10.0	>	c Jde. uie X(3) aE.
Toyai NeyaiMt CR P-Nc - curye H	v GL5LH-T	5	15	16.7	10.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
TPS - ceDmoiayne YraJyooE	v PL71	~	5L	2.0	10.0	×	
TPS I oiayneMXTv 2	v PL8L	4	38	10.5	10.0	>	
oiayie ArgaEra I oDpouE. M	v PL74	4	3F	11.4	10.0	`	c Jde. uie X(3) aE. Hbc QI
heak HJnsnMwoJnatie ICaEne XCsnMureye HEaiOwer	v KL58G	4	33	12.1	10.0	`	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
bat orayorCl oEyoi caD pieM(bl c)							
HikainEnCt CPI Tnyrayor	vsL37-P	3	44	8.9	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
diorn et CsnMreye HEaiONer	vsL4FG	9	P6	10.7	10.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
smilwolime. NerJurCtCYPNic	v GL3FY	5	31	6.5	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
sn/Mobinne. Neyail/MtCRP-Nc-cunyeH	v GL5LH-Y	5	31	6.5	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
Yiuorn e t CPI Tıyrayor	v KL4LP	က	43	7.0	2.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
Yree IV tCsnMureye HEaiONer	v KL5FG	က	F6	5.4	2.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
SexamaieEyldroDnuD-snMMoime.	v GLFLY	5	37	5.4	2.0	>	V∨PN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
Najorlayoo⊟M-snMMoinne.	vsL93Y	က	F6	5.4	2.0	>	c Jde. uie X(3) aE. Hbc
VnymyeaE. VnyrayeaMV (VAx)tCsnMulreyeHEaiGWer	v KLF9G	5	31	6.5	2.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
Vnynnye alMV tCsnMulreye HEai OMer	v KLF7G	3	47	6.4	2.0	>	c Jde. uie X(3) aE.
PHS/PdeEoiM(GI/Nc-cRN)	v PL7F(c RN)	5	36	5.6	2.0	>	V∨PN 1999 cJde. uie X(3)aE. Hbc QI c3 requmeDeEy
OeaJynnne PdoNpdoruMaMP-XCsnNuTreye HEaiGNer	v KL71G	5	37	5.4	2.0	>	V∨PN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
cuifaye (Turt n nDeynd) aMcA4 5-t Cs nMreye HEaiONer	vsL41G	5	4L	5.0	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
c uifn e aMc 5-	v KL8F	5	36	5.6	2.0	>	
Total Carne XCs Milliere HFaiOMer	v KL56G	2	33	6.1	5.0	1	VVPN 1999 c.Ide Hie X(3) aF Hbc QL c.3 requireDeEv



Page h ork Ar. er ProjeJy l ine Ey

: 54 of 3L : vN11L4586 : vVI @AVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc

QuainCl oEvoi caDpie TOpe		Ö	nut		Rate (%)		Ouality Control Specification
Analytical Methods	Method	000	Regular	Actual	Expected	Evaluation	
bat oravorCl oEvoi caD pieM(bl c) - I oEvEue.							
Toyais nMAbinae. coin M(Sngd bennei)	v HL1FS	က	4	8.9	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
Toyai NerJurCt CYRNc	v GL3FT	-	15	8.3	2.0	>	Hbc QI
Toyai NeyaiMt CR P-Nc - curye H	v GL5LH-T	1	15	8.3	5.0	>	c Jde. uie X(3) aE. Hbc QI
TPS - c eD moiayie YraJyoE	v PL71	2	4	5.0	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
TPS I oiayieMXTv2	v PL8L	2	38	5.3	5.0	>	V∨PN 1999 cJde. uie X(3) aE. Hbc QI c3 requ⊪eDeEy
l oiayne ArgaEn I oDpouE. M	v PL74	2	3F	5.7	5.0	>	V∨PN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
h eak HJn srNMoJnatie ICaEn e XCsrNWireye HEaiOwer	v KL58G	2	33	6.1	2.0	`	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
Neydo. XiaEkM(NX)							
diorn e t CsnMureye HEaiOMer	vs L4FG	3	F6	5.4	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
s n/Mobine. NerJurCt CYRNc	v GL3FY	2	31	6.5	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
s nMobine. NeyaiMt CR P-Nc - curye H	v GL5LH-Y	2	31	6.5	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
Yiuorn e t CPI Tıyrayor	v KL4LP	3	43	7.0	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
Yree IV tCsm/Ureye HEai ONer	v KL5FG	က	94	5.4	2.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
SexanaieEyIdroDnuD-smMoline.	v GLFLY	2	37	5.4	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
NajorIayno EM-smModine.	vs L93Y	က	94	5.4	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
Vnynnye a E. Vnyraye a MV (VAx) t CsnhWlreye H Eai Ower	v KLF9G	2	31	6.5	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
Vnynnye aMV t CsnMureye HEai OMer	v KLF7G	က	47	6.4	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
PHS/PdeEpiM(GI /Nc - cR)	v PL7F(c RN)	2	36	5.6	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
OeaJyme PdoMpdoruMaMP-XCs mMleye HEaiOMer	v KL71G	2	37	5.4	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
cuifaye (Turt n nDeynd) aMcA4 5-t Cs nMreye HEai Ower	vs L41G	2	4	2.0	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
cuifn e aMc5-	v KL8F	2	36	5.6	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
Toyai I CaEn e XCs nMreye HEaiON€r	v KL56G	5	33	6.1	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
Toyais nMMbine. coin M(Sngd benei)	v HL1FS	3	44	8.9	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
Toyai NerJurCt CYRNc	v GL3FT	_	15	8.3	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
Toyai NeyaiMt CR P-Nc - curye H	v GL5LH-T	-	15	8.3	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
TPS - ceD moiayie YraJyoE	v PL71	2	4	2.0	2.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requireDeEy
TPS I oiayieMXTv 2	v PL8L	5	38	5.3	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
I oiayne ArgaEn I oDpouE. M	v PL74	5	3F	5.7	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
h eak HJn srNMoJnatie ICaEn e XCsrNWireye HEaiOWer	v KL58G	2	33	6.1	5.0	>	VvPN 1999 cJde. uie X(3) aE. Hbc QI c3 requmeDeEy
Nayrx c prkeM(Nc)							
diorn e t Cs nMreye HEaiONer	v s L4FG	8	P6	5.4	5.0	>	Hbc QI c3 requireDeEy
smille. NerJurCt CYRNc	v GL3FY	2	31	6.5	5.0	>	Hbc QI c3 requireDeEy
s nMobine. NeyaiMt CR P-Nc - curye H	^ GL5LH-Y	2	31	6.5	5.0	>	Hbc QI c3 requireDeEy
Yiuorn e t CPI Tıyrayor	v KL4LP	3	43	7.0	5.0	>	Hbc QI c3 requireDeEy
Yree IV t CsmWlreye HEai OWer	v KL5FG	က	92	5.4	2.0	>	Hbc QI c3 requireDeEy
SexannaieEyIdroDnuD-snMwoinne.	v GLFLY	2	37	5.4	5.0	>	Hbc QI c3 requireDeEy
Vnynnye a E. Vnynaye a MV (VAx)t CsnMureye H Eai ONer	v KLF9G	2	31	6.5	2.0	>	Hbc QI c3 requireDeEy
VnynnyeaMVtCsnMulreyeHEaiOMer	v KLF7G	3	47	6.4	5.0	>	Hbc QI c3 requireDeEy
OeaJymme PdoMpdoruMaMP-XCs nMulreye HEaiGMer	v KL71G	2	37	5.4	5.0	>	Hbc QI c3 requireDeEy
cuifaye (Turt n nDeynd) aMcA4 5-t Cs nMreye HEaiOw€r	vsL41G	5	4L	5.0	5.0	>	Hbc QI c3 requireDeEy
Toyai I CaEn e XCs nMreye HEaiON€r	v KL56G	5	33	6.1	5.0	>	Hbc QI c3 requireDeEy
Toyai NerJurCt CYRNc	v GL3FT	-	15	8.3	5.0	>	Hbc QI c3 requireDeEy
Toyai NeyaiMt CR P-Nc - curye H	v GL5LH-T	~	15	8.3	5.0	>	Hbc QI c3 requireDeEy
,	_					•	

A Campbell Brothers Limited Company



: 5F of 3L : vN11L4586 : vVI @AVNvVTHb vHOTS cI RVI vc : 51LL74 HbXv OT PHOK GHc h AOKc Page h ork Ar. er limeEy ProjeJy

Nayrx: WATER				vmaiuaynoE	: x = QuairyCl oE	yoi frequeEJCE	v maiuayoE: 🗴 = Quain/CI oEyoi frequeEJCEoywnydrE MpeJrfrdayooE; 🗸 = Quain/CI oEyoi frequeEJCwnydrE MpeJrfrdayooEB
QuainCl oEyroi caDpie TQpe		8	Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	ОС	Regular	Actual	Expected	Evaluation	
Nayrx c prkeM(Nc) - 1 o EyEue.							
TPS I oiayieMXTv2	V PL8L	5	38	5.3	5.0	>	Hbc QI c3 requireDeEy
I oiayie ArgaEul I oDpouE. M	v PL74	5	3F	5.7	5.0	>	Hbc QI c3 requireDeEy
h eak HJn sn MAoJnatie ICaEn e XCsn Mulreye HEaiOWer	v KL58G	5	33	6.1	5.0	>	Hbc QI c3 requireDeEy



 Page
 : 56 of 3L

 h ork Ar. er
 : vN11L4586

 l ineEy
 : vVI RDAVNvVTHb vHOTS cl RVI vc rojeJy

 ProjeJy
 : 51LL74 HbXv OT PHOK GHc n A OKc

Brief Method Summaries

Tde aEaiQylai proJe. ureMuNe. 1 Cyde v ErmoEDeEyais mmMnoE dame teeE.eneiope. froD eNyatinkde. nEyerEayweEaiCreJogEze. proJe. ureMMuJd aNydoNe putinkde. 1 Cyde oc v PHUHPSHUHo aE. Vv PN BREdouNe.eneiope. proJe. ureMare eDpioGe. nEyde at NeEJe of.oJuDeEye. NyaE. ar. Mort CJineEyrequeNyBTde foilownEg reporyproma eMt mef.eNumpwoEMofyde aEaiQydai proJe. ureMeDpioGe. for reMuiyMreporye. nEyde eneiope. neiope. are proma.e. wydnEyde Neydo.seNumpwoENB

Analytical Methods	Method	Matrix	Method Descriptions
Sd	v HLLF	h HTv O	HPSH 511Mye. B4FLLS+XBpS ofwayer NaDpieMnM. eyerDnEe. tCnRv enyder Da EuaiiCort Cauyo Daye. pS DeyerB TdnMDeydo. nhJoDpina Eywnyd VvPN (1999) cJde. uie X(3) (Hpp. xB5)
Toyais nMA6inre. coin M(Sigid benrei)	v HL1FS	h HTv O	HPSH 511Mje. BL5F4LI H grammDeyral proJe. ure yday. eyerDrEeMyde aDouEyof Yfnjerat ie'reMn ue rE aE aqueouM NaDpieBH weii-Drxe. NaDpie nVifnjere. ydrougd a giaMMfn re finjer (155uD)BTde finjvaye nMenaporaye. yo . rCEeM aE nre. yo JoENjaEywengdyay18L+/-FIBTdnMDeydo. nMJoDpinaEywnyd Vv PN (1999) cJde. uie X(3) (Hpp. xB5)
HikainEnyCt CPI Tryrayor	vsL37-P	h HTv O	HPSH 511Mye. BL535L X TdrMproJe. ure. eyerDnEeMaikainEnCt CauyoDaye. DeaMureDeEy(e8gBPI Tnyraye) uMnEg pS 48F for nE. nJaynEg yde yoyai aikainEnyCeEponEyBTdnMDeydo. nMJoDpinaEywnyd VvPN (1999) cJde. uie X(3) (Hpp. xB5)
cuifaye (Turt n nDeyna) aMcA45-tC s nMureye HEaiONer	vsL41G	h HTv O	HPSH 511Mye. BLAFLL-CA4 cuifaye meMare JoEmenye. yo a tamuD Muifaye MuMpeEMmoE nE a EaJeyya aJn De. nuD wnyd tamuD Jdiorn eBbrogdyat Mort a EJe of yde Xac A4 MuMpeEMmoE mMD eaMure. t Ca pdoyoDeyer a E. yde c A4-5 JoEJeEyraymoE nM. eyerDinEe. t CJoD parnMoE of yde rea. nEg wnyd a MaE. ar. JurmeBTdnMDeydo. nMJoDpinaEywnyd Vv PN (1999) cJde. uie X(3) (Hpp. xB5)
I diorn e t Cs nMreye HEaiOMer	vsL4FG	h HTv O	HPSH 511Mje. BLAFLLIi-GBTde ydroJCaEaye roEnMinteraye. froD DerJurnJydroJCaEaye ydrougd NequeNyrayroE of DerJurCtCyde Jdiorn e roEyo forD EoE-roEnMe. DerJurnJJdiorn enEyde preNeEJe of ferrnJroBNyde intraye. ydroJCaye forD MdrogdiGJoioure. ferrnJydroJCaye wdrud nMDeaMure. ay48L ED HPSH 511Mje. nyoENAei Deydo. 5 L17-1-b aprin 5LL3
NajorIayoo EM-sıMAoline.	vsL93Y	h HTv O	HPSH 511Mje. B.2315L; 0 c v PH ch. 846 - 6L1L Tde R. PHv c jeJdEque roEhAeMjde LBFUD frijere. MaDpie ayoDM eDrynEg a JdaraJyerhMyJ MoeJyuDBTdrNMpeJyuD nMydeEJoDpare. agarEMyDayrx Dayde. MaE. ar. Mfor quaEyniaayoEB TdrMDeydo. nMJoDpiraEywnyd V v PN (1999) c Jde. uie X(3) (Hpp. xB5)
s nhAmbinne. NeyaiMt CR P-Nc - cunye H	v GL5LH.Y	h HTv O	(HPSH 51Mye. B&315F; 0 c v PH ch 846 - 6L5LUHbc Qh Rv V/v GL5L): caDpieMare LBF uD finyere. pror yo aEaiCMMB Tde R PN c yeJdEque uymzeMa drgdiCeffolmeEyargoE piaMDa yo m6rze MeieJye. eieDeEyMBABHare ydeE paMMe. rEyo a drgd maJuuD DaMMMyeJyoDeyerUwdnold MeparayeMyde aEaiQeMt aMe. oE ydenr .nMyEJyDaMMyo Jdenr DeaMureDeEyt Ca .nMureye . Œo e mE. eyeJyorB
Toyai NeyaiMt CR P-Nc - curye H	v GL5LH-T	h HTv O	(HPSH 51Mye. B&315F; 0 c v PH ch 846 - 6L5LUHbc Qh Rv V/v GL5L): Tde R PN c yeJdErque uynizzeMa drgdiC effolmeEyargoE piaMDa yo noEzze NeieJye. eieDeEyMBNeEMare ydeE paMA€. nEya a drgd maJuuD DaMMNybeJyoDeyerU wdnud NeparayeMyde aEaiQeMt aNe. oE ydenr . nNynEJyDaMMyo Jdarge raynoMprnor yo ydenr DeaMureDeEyt Ca . nNureye . GEo. e noE . eyeJyorB
snModime. NerJurCtCYRNc	v GL3FY	h HTv O	He 3FFLUHPSH 51Mye. B3115 Sg - X (Yiow-nĒjeJynoE(c B i5)(l oi. I apour geEeraynoE) HHc) caDpieMare LB4F uD finjere. pror yo aEaiQMaNB YRN-HHc nMaE auyoDaye. fiaDeieMMayoDnJ at NorpynoE yeJdEqueBH troDaye/t roDn e reageEynMuN&. yo oxn nAe aECorgaEnJ DerJurCJoDpouE. MnE yde finjere. NaDpieB Tde noEnJ DerJurCnMire. uJe. oEinEe yo ayoDnJ DerJurCnmapour t Cc B i5 wdnJd nMydeE purge. nEyo a deaye. quanzz JeiiB QuaeEnfnJaynoE nMt C JoDparnEg at Nort aEJe aganENya Jaint raynoE JurnneB TdnMDeydo. nMJoDpinaEywnyd Vv PN (1999) cJde. uie X(3) (Hpp. xB5)
Toyai NerJurCt CYRIC	v GL3FT	h HTv O	He 3FFLUHPSH 51Me. B3115 Sg - X (Yiow-InjeJywE (c El i5)(l oi. I apour geEeraywE) HHc) YRN-HHc IMAE auyoDaye. fiaDeielMayoDrul at MorpywE yeJdErqueBH troDaye/troDn e reageEyrMuMe. yo oxn iMe aECorgaEu DerJurCJoDpouE. Mit ye uEfriyere. MaDpieB Tde rwEul DerJurCiMre. uJe. oEinte yo ayoDrul DerJurCnapour t C c El i5 wdruld iMydeE purge. Itjo a deaye. quaryz JeilB QuaEyfrulaywE iMit CJoDparnteg at Mort aEJe aganteMya Jaint rayweE JurnneBTdiMIDeydo. iMJoDpinaEywnyd Vv PN (1999) c Jde. uie X(3) (Hpp. xB5)



 Page
 : 57 of 3L

 h ork Ar. er
 : vN11L4586

 I imeEy
 : vVI PQAVNvVTHb vHOTS cl RVI vc ProjeJy

 ProjeJy
 : 51LL74 HbXv OT PHOK GHC h AOKC

Analytical Methods	Method	Matrix	Method Descriptions
SexamaieEyIdroDnuD-snMobines.	v GLFLY	h HTv O	HPSH 5111/ye. BLBFLI IXBcaDpieMare LBJF uD finjere. prnoryo aEaiOMNBSexamaieEyJdroDnuD nM. eyerDnEe. oE finjere. wayer NaDpie aMreJenne. t CpS a. juMJDeEyaE. Joiour. enneiopDeEyuMEg. epdeEQJartazn eBvaJd ruE of NaDpieMMNDeaMure. aganEMa finne-ponEyJaintraynoEJurnneBTdnMDeydo. nMJoDpinaEywnyd VvPN (1999) cJde. uie X(3) (Hpp. xB5)
Yree IV tCsnMulreye HEaiONêr	v KL5FG	h HTv O	HPSH 5111/ye. 18J4FLL-1 V-1 &V Yree I CaEne nM. eyerDnEe. oE MaDpieMafyer. nMyniaynoE uMnEg a pCn nEe-tant nyund aJn JoiounnEg reageEyfoiiowe. wnyd aEs nMyreye HEaiCMer fnEnMiBTdnMDeydo. nMJoDpinaEywnyd VvPN (1999) cJde. uie X(3) (Hpp. xB5)
Toyai I CaEn e XCs Mülreye HEaiONer	v KL56G	h HTv O	HPSH 5111/ye. 18.4 FLL-1 V-1 & V Toyai I CaEn e m/l. eyerDrfe. froD aqueouMMoliuyneEMafyer. nAyniayneEwnyd Miipdurna aJn BTde reMuiyaEy. nAyniaye nAydeEJapyure. nE a JauMya at Nort er NoliuynoEfoilowe. t Cs nAllreye HEaiCMerB TdnMDeydo. nAJoDpinaEywnyd VvPN (1999) c Jde. uie X(3) (Hpp. xB5)
h eak HJn smMAkJmatie I CaEne XC smVureye HEaiCNAer	v KL58G	h HTv O	HPSH 511/ye. 1844FLL-1 V-1 & V h HS I CaEne nM. eyerDrEe. froD aqueouMNoluyoEMafyer. nMiniayoEwnd aJeyula aJn BTde reMinyaEy. nMiniaye nMydeEJapyure. nE a Jaunyula ti Nort er NoluyoEfoilowe. t Cs nMineye HEalQNerBTdnM Deydo. nMuDoDpinaEywnd VvPN (1999) cJde. uie X(3) (Hpp. xB5)
Yiuom e t CPI Tryrayor	v KL4LP	h HTv O	HPSH 511Wje. BLAFLL Y-I I s TH MAB e. yo yde MaD pie yo promme a uEnforD moEul MyreEgyd taukgroulE. Ua. juNypSU aE. t reak up JoDpiexeMB Yiuom e JoEJeEyraymEnM. eyerDnEe. t Cenyder DaEuai or auyoDayd Rev DeaMureDeEyB TdnMDeydo. nMJoDpinaEywnyd VvPN (1999) c Jde. uie X(3) (Hpp. xB5)
HDDoEma aMV tCs nNureye a EaiONer	v KLFFG	h HTv O	HPSH 5111/ye. BLAFLL-VS3 G HDDOETan M. eyerDnEe. t.C. meJyJoionnDeyrCt.CsnMneye HEaiCNerBTdnMDeydo.nM JoDpinaEywnd Vv PN (1999) c.Jde. uie X(3) (Hpp. xB5)
НD D о Ем D а МV	v KLFFG-VS4	h HTv O	HDDOENID NEYDE NAD pie nAreporye. aMyde no Enkle. / u Eno Enkle. fra Jyo ENIT Cyde u Ne of a Eo Dograpd a E. yde nEywai pS a E. TeD perayure BHD Do Ena nM. eyer DinEe. t C. nne JyJoion Dey Ct Cs nAllreye HEai O'Aer a Jor. nEg yo HPSH 51 My e. BLYFILL-VS3 GB Tdn MJD Deydo. nAJOD pina Eywyd V v PN (1999) c Jde. uie X(3) (Hpp. x B5)
Vnynge aMV tCsmWlreye HEaiOWer	v KLF7G	h HTv O	HPSH 511/wje. BLAFLL-VA5-XB Vnynye nM. eyerDnEe. t.C. meJyJoiounnDeyrCt.Cs nMareye HEairONerBTdnMDeydo. nM. JoDpinaEywnyd Vv PN (1999) c.Jde. uie X(3) (Hpp. xB5)
VnyrayeaMVtCsnMireyeHEaicMer	v KLF8G	h HTv O	HPSH 511/wfe. BLAFLL-VA3-YBVnyrayenMne. uJe. yo Enynyet CwaCofa Ja. DnuD ne. uJynoE JoiuDE foiiowe. t C quaEyfidaynoEt CsnMineye HEaidNenB VnyrnyenM. eyerDnEe. NeperayeiCt C. neJyJoiounnDeyCaE. reMiliyfor Vnyraye JaiJuiaye. aMyde. nffereEJeteyweeEydeyworeMilyMBTdnMDeydo. nMJoDpinaEywnyd VvPN (1999) cJde. uie X(3) (Hpp. xB5)
VnymeaE. VnyayeaMV (VAx)tCsnMuneye HEaiGMer	v KLF9G	h HTv O	HPSH 511Mje. BLAFLL-VA3-YBI oDtrEe. oxn nikle. VnyrogeE(VA5+VA3) nM. eyerDnEe. tCl a. DnuD Oe. uJyooEaE. . nreJyJoiounnDeyCtCs niMIreye HEaiGMerBTdnMDeydo. ntMJoDpinaEywnydVvPN (1999) cJde. uie X(3) (Hpp. xB5)
OeaJyme PdoMpdoruMaMP-XCs Mulreye HEaiOver	v KL71G	h HTv O	HPSH 511/1/1/19. BLAFLL-P Y HDDOENID Doid. aye aE. poyaMMuD aEynDoEd yaryraye reaJyMnE aJn De. nuD wnyd oydopdoMydaye yo forD a deyeropoiCaJn -pdoMyddoDoid. na aJn - wdraid nMre. uJe. yo nEyeEMeiCJoioure. Doid. eEuD t iue t CaMlort na aJn BQuaEynnayooEnMt Cs nMilreye HEaiOMerBTdnMDeydo. nMJoDpinaEywnyd VvPN (1999) c Jde. uie X(3) (Hpp. xB5)
cuifn e aMc5-	vKL8F	h HTv O	HPSH 511Mje. BLAFLL-c5-s cuifn e MoeJæMpreMeEyrE wayer MaDpieMare nDDe. nayeiCpreJmpnaye. wdeE JoiieJye. nE preyeaye. JauMpd/znEJ aJeyaye preMerne. MaDpie JoBjanEenMa Hiyer yde MuperEayaEynM. nMar. e. Uyde reMuiyaEy preJmpnaye nMydeE Joioure. uMnEg DeydQeEe tiue nE. nJayor aE. DeaMure. uMnEg 01 -1 Re. eyeJynoE ay664EDBTdnM Deydo. nMJoDpinaEywnyd VyPN (1999) cJde. uie X(3) (Hpp. xB5)
Red XaiaEJetCPITsHaE. RPHvc	v VLFF - PG	h HTv O	HPSH 51Myv. B1L3LYBTde Ro Eoul Xaia EJe m MJaiJuia ye. ta Me. o Eyde Dajor HEno EMa E. I a yno EMB Tde Dajor a Eno EM In Eliu. e Hikain Eny CLI dionne a E. cuifa ye w dna'd. eyen DinEe. t CPI Ta E. s HB Tde I a yno EMare. eyen DinEe. t C R PHvc BTdm MDeydo. m MJo Dpina Eywnyd Vv PN (1999) c Jde. uie X(3) (Hpp. x 185)
TPS - ceD moiayie YraJyoE	v PL71	h HTv O	0cvPHch 846-8L1FH Tde NaDpie exyaJynMaEaiOMe. tCl apriiarCGI/MB aE. quaEyinJayovEnMtCJoDpanMoE aganEMyaEeNyatinMde. FponEyJaintraynoEJurme of E-HikaEe MyaE.ar.MBTdnMDeydo.nMJoDpinaEywnyd VvPN (1999)cJde.uie X(3)(Hpp.xB5)



 Page
 : 58 of 3L

 h ork Ar. er
 : vN11L4586

 l ineEy
 : vVI RDAVNvVTHb vHOTS c1 RVI vc

 ProjeJy
 : 51LL74 HbXv OT PHOK GHc h A OKc

Analytical Methods	Method	Matrix	Method Descriptions
I oiayie ArgaEul I oDpouE. M	vPL74	h HTv O	OcvPHch 846-856LX h ayer N&DpieMare.meJyiCpurge. prnoryo aEaiOMMNt CI apniiarCGI /Nc aE. quaEyfidayoEnMt CJoDparnMoEagarEMyaEeNyat inMde. F porEyJaint rayoEJurneBTdnMDeydo. nMJoDpinaEywnyd VvPN (1999) cJde.uie X(3) (Hpp. xB5)
PHS/PdeEoiM(GI /Nc - cRV)	∨PL7F(cℝl)	h HTv O	OcvPHch 846-857Ls caDpie exyaJyMare aEaiOve. tCl apriiarCGl /Nc rEcRN No.eaE. quaEyniaJayoeIn/tC JoDparnNoEaganENyaEeMatinNde. FporEyJaintrayoeJurneBTdnMDeydo. nMJoDpinaEywnyd VvPN (1999)cJde.uie X(3)(Hpp.xB5)
TPS I oiayieMXTv2	v PL8L	h HTv O	OcvPHch 846-856LX hayer MaDpieMare.meJyCpurge.prnoryoaEaiCMMMtClapniarCGI/NcaE. quaEyndaynoEnMtCJoDparmMoEaganEMyaEeMyatinMde.FponEyJaintraynoEJurmeBTdnMDeydo.nMJoDpinaEywnyd VvPN (1999) cJde.uie X(3) (Hpp.xB5)
Preparation Methods	Method	Matrix	Method Descriptions
Yree I GaEn e	v KL5F-PO	h HTv O	HPSH 51Nye. BLAFLL I V-1 &VBTde NaDpie nM. nAyiie. ay Eayurai pSBTde I V nAyrappe. nE a Jaunyo Moiuyno ELAE. qua Eynine. t CJoiounn Dey COE YRHB Tdn MDeydo. nAJOD pina Eywnyd Vv PN (1999) cJde. uie X(3) (Hpp. xB5)
Toyail CaEn e	v KL56-PO	h HTv O	HPSH 511/nye. BLAFLL I V-1 &VBTde NaDpie nM. nAmie. wnd S5cA4 reieaNnEg aii touE. JCBEn eMaMSI VBTde I V nAnyappe. nE a JaunAnd Notuyno EUaE. qua Enyine. t CJoiounnDey CoEYRHBT dnMDeydo. nAJOD pina Eywnyd VvPN (1999) cJde. uie X(3) (Hpp. xB5)
heak HJn srMMoJnatie ICaEne	v KL58-PO	h HTv O	HPSH 511Mje. BLAFLIV-R&VBTde MaDpie nM. nMynie. wnyd HJeyal aJn UNeieJynneiCreieaMfeg yde weakiCtouE. Deyai JCaEn eMaMSIVBTde IV nMyappe. nE a JauNyd MoiuynoELdaE. quaEnynine. t CJoiournDeyCoEYRHBTdnM Deydo. nMJoDpinaEywnyd VvPN (1999) cJde. uie X(3) (Hpp. xB5)
s rgeMroE for Toyai OeJonerat ie NeyaiM	v.V5F	h HTv O	0cvPHch 846-3LLFNeydo. 3LLFnMaVnn/SCroJdional aJn. ngeMnoEproJe.ureuNe. yo prepare MurfaJe aE. grouE. wayer NaDpieMforaEaiCMMtCRPHvcorRPNcBTdnMDeydo.nMJoDpinaEywndVvPN (1999) cJde.uie X(3) (Hpp.xBs)
ceparayorCYuEEeivxyaJynoE of brqun M	A0G14	h HTv O	OcvPHch 846 - 3F1LX FLL Db yo 1b of NaDpie MyzaEMerre. yo a NaparayorCfuEEei aE. MerraiiCexyraJye. ydree yDeMuMEg 6LDb s1 N for eaJd exyraJyB Tde reMuiyaEyexyraJyMare JoDt nEe. U. edC raye. aE. JoEJeEyraye. for aEaiGMMBTdnMDeydo. mMJoDpinaEywnyd VvPN (1999) cJde. uie X(3) (Hpp. xB5)B Hbc. efauiyexJiu. eMN&. nDeEy wdnyl DaCt e reMheEynEyde JoEganEerB
I oiayieMh ayer PreparayФЕ	AOG16-h	h HTv O	HFDbainquoyorFDbofa.niuye. MaDpienMae. yoa.4LDbIAI mmaiforMpangnEgB



 Page
 : 59 of 3L

 h ork Ar. er
 : v N 11L4586

 l ineEy
 : v VI ROAVN v V THb v HOTS cI R VI v c

 ProjeJy
 : 51LL74 HbXv OT PHOK GHc h A OKc

Summary of Outliers

Outliers: Quality Control Samples

Tde foliowing reporty digidigatyM outpinentM flagge. IE yde QuainyC I oEyroi (QI) OeponyB currogaye reJonentC inDnyM are Manyal aE. tanke. oE 0 cvPH ch 846 or Hbc-Qh RavV/38 (nE yde at NeEsle of Nobelinal 0 cvPH inDnyMyB Tdnh. reporty. NapiacUMQI AutimentM(reaudeN) oECB

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Nayrx: WATER

I oDpouE. Group VaDe	bat orayorCcaDpie R	Iine EycaDpie Rs	Analyte	I Hc VuDter	saya	My Chd	Comment
Matrix Spike (MS) Recoveries							
vs L41G: cuifaye (Turt n nDeyna) aMcA4 5- t Cs H	v N 11L4564-LL5	HEoECD ouM	Sufate as SO4 - Turbidimetric	148L8-79-8	Voy s eyerDrEe.		MS recovery not determined, background level greater than or equal to 4x spike level.
vs L41G: cuifaye (Turt n nDeyna) aMcA4 5- t Cs H	vN11L4586-LL5	Gh 4	Sufate as SO4 - Turbidimetric	148L8-79-8	Voy s eyerD nEe.		MS recovery not determined, background level greater than or equal to 4x spike level.
vsL4FG:Idiom esnMreyeaEaiOMer	v N 11L4586-L55	Gh 43s	Chloride	16887-LL-6 Voy	Voy s eyerD nEe.		MS recovery not determined, background level greater than or equal to 4x spike level.
vsL4FG:Idiom esnMreyeaEaiOMer	v N 11L4564-LL5	HEoECD ou M	Chloride	16887-LL-6	Voy s eyerD nEe.	-	MS recovery not determined, background level greater than or equal to 4x spike level.
v KLF9G: Vnynye piuMV nyraye aMV (VAx) t Cs nMareye HĘv N 11L4586-LL5	E v N 11L4586-LL5	Gh 4	Nitrite + Nitrate as N		Voy s eyerD nEe.	-	MS recovery not determined, background level greater than or equal to 4x spike level.
v PL74v : SaiogeEaye. Himpdayol I oD pou E. M	v N 11L4586-LL5	Gh 4	1.1-Dichloroethene	7F-3F-4	119 %	F4-1L4%	Recovery greater than upper 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

cut -Nayrx: WATER

I oDpouE. Group VaDe	bat orayorCcaDpie Rs I ineEycaDpie Rs	Iine EycaDpie Rs	Analyte	I Hc VuDter saya	saya	DrdD ryM	brD ryM Comment
Samples Submitted							
vPL7F(c№)c: PdeEbirl I oDpouE. currogayeM	v N 11L4586-L53	Gh 44s	Phenol-d6	13157-88-3 Voy s eyerDrE	Voy s eyerDrEe.		Surrogate recovery not determined due to (target or non-target) matrix interferences
vPL7F(c№)c: PdeEbirl I oDpouE. currogayeM	v N 11L4586-L53	Gh 44s	2-Chlorophenol-D4	939F1-73-6 Voy s eyerDrE	Voy s eyerDrEe.		Surrogate recovery not determined due to (target or non-target) matrix interferences
vPL7F(cRN)c: PdeEoinl I oDpouE. currogayeM	v N 11L4586-L53	Gh 44s	2.4.6-Tribromophenol	118-79-6 Voy s eyerDrE	Voy s eyerDrEe.		Surrogate recovery not determined due to (target or non-target) matrix interferences
vPL7F(c№)T: PHS currogayeM	v N 11L4586-L53	Gh 44s	2-Fluorobiphenyl	351-6L-8 Voy s eyerDrE	Voy s eyerDrEe.		Surrogate recovery not determined due to (target or non-target) matrix interferences
v PL7F(c №)T: PHS c urrogayeM	v N 11L4586-L53	Gh 44s	Anthracene-d10	1719-L6-8 Voy s eyerDrE	Voy s eyerDrEe.	1	Surrogate recovery not determined due to (target or non-target) matrix interferences



Surrogate recovery not determined due to (target or non-target) matrix interferences

Voy s eyerDrEe.

1718-F1-L

4-Terphenyl-d14

Gh 44s

v N 11L4586-L53

vPL7F(cRN)T: PHS currogayeM Samples Submitted - Continued I oDpouE. Group VaDe cut -Nayrx: WATER

Analyte

bat orayorCcaDpie Rs InneEycaDpie Rs

Comment

briD ryM

saya

I Hc VuDter

: vN11L4586 3L of 3L h ork Ar. er l ireEy

: VVI RDAVNVVTHb VHOTS CI RVI VC

ProjeJy

: 51LL74 HbXv OT PHOK GHc h AOKc

Outliers: Analysis Holding Time Compliance

Tdn/Nrepony. n/pia/Ov/Soi. n/Eg TriDe t reaJdeMoEMABA ECyde ren/peJynne v xyaJynoE/ PreparaynoEaE /or HEaiOwNAUOD poEeEynwhare. n/pbia/Ov. B

Navr: WATER

Nayik: WAIER							
Method		Exi	Extraction / Preparation			Analysis	
Container / I ineEycaDpie R (M)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005: pH							
Clear Plastic Bottle - Natural							
Gh 9U	Gh 15	-	-	1	57-HPO-5L11	19-HPO-5L11	œ
Clear Plastic Bottle - Natural							
Gh 3U	Gh 4U	1	1	1	57-HPO-5L11	5L-HPO-5L11	7
Gh 1LU	Gh 11U						
Gh 13U	Gh 14U						
Gh 1FU	Gh 16U						
Gh 51U	Gh 55U						
Gh 53U	Gh 54U						
Gh 5FU	Gh 57U						
Gh 36U	Gh 39U						
Gh 4LU	Gh 41U						
Gh 43s U	Gh 44s U						
s o P 1 U	cPbR1U						
soP3U	cPbR3U						
Gh 19U	s 0P4						
Clear Plastic Bottle - Natural							
Gh 45s U	cPbR4	-	1	!	57-HPO-5L11	51-HPO-5L11	9
EK085M: Sulfide as S2-							
Clear Plastic Bottle - Zinc Acetate/NaOH							
Gh 9U	Gh 15	-	-	-	57-HPO-5L11	56-HPO-5L11	-

Outliers: Frequency of Quality Control Samples

Tde foilownEg reporydradingdyMt reaJdeMnE yde YrequeEJCof QuainyCl oEyol caDpieMB

Nayrx: WATER

Qualify) obyol cappie I toe	0	I ouEy	Oaye (%)	(%)	QuainyCl oEyoi cpeJnfalaynoE
Neydo.	Ø	Oeguiar	HJyuai	v xpeJye.	
bat orayorCs upinlayeM(s 0 P)					
PHS/PdeEpiM(GI /Nc - cR)	_	16	6B 3	1LB	VvPN 1999 cJde. uie X(3) aE Hbc QI c3 requ≡eDeEy
TPS - ceD moiayie YraJyoE	-	5L	뜊	1LB	VvPN 1999 cJde. uie X(3) aE Hbc QI c3 requmeDeEy







Environmental Division

	CERTIFICA	CERTIFICATE OF ANALYSIS	
Work Order	: EM1104AA m	6 s:	० १९३१६०
nt eNdt eNV	-		
n egmC	OEIRTOIMEIHNS EN LHCI. TEI. EI	r st 3 ys Gyi	o EmDyßmu gmßefc vDP8mfMgef 3Rymg
n 3m G AC	oMVfc I J& fW MEh	n 3m G AC	onsylded seP.
1 ФудРР	o: BK2X5ffTTFY	н оодерь	o4fdgPGeeVGh-ymDsegfJShflRPGsesfY1j1
	IXX, hnVI UfJ® pl 7h, VI r\$ fY011		
E@sve	o Oscu gPw ggPB →	E®sve	o Asydeths seen w seegm Days BA3 u
, ge3ng	o981fa8bj 1888	, ფლ პოფ	0981@@F4afa80b
IsAPuveg	o981f0Yfa8bj 1b44	IsAPune	o981@ @ F4afa801
: y8zgAC	oT100j 4fl r2EV, f. I VKfGI hd XVKh	Qn fr gDge	oNE: Mf1aaaffh A g GRagf2 (Y) fs m Cfl r h f Qn h Yfyg q Rygu g m C
X yogyfmRu t gy			
n @@fmRutgy		cs@fhsu-@PVgAgDgO	○0Y側 U@011
hsu - @y		SPPgfc s @	○YO@II U@011
h/@			
		N3B3lfPsu - @PfygAgvDgO	То
QR3GfmRu t gy	oME/01F/11fJ Y	N3B3lfPsu - @Pfsmse PgO	To
	الآك من الأمام كارسياطه ما والمناهمية عسام ما الأصفية عليا من المناهمية عليا من الأصفاحية عليا من الأصفاحية عليا من المناهمية عليا من الأصفاحية عليا من الأصفاحية عليا من الأصفاحية عليا من المناهمية عليا من الأصفاحية عليا من الأصفاحية المناهمية عليا من الأصفاحية المناهمية عليا من الأصفاحية المناهمية عليا من الأصفاحية المناهمية عليا المناهمية المناهمية عليا المناهمية المناهمية عليا المناهمية المناهمية عليا المناهمية على المناهمية عليا المناهمية على المناهمية عليا المناهمية عليا المناهمية عليا المناهمية عليا المنا		20~00

, . MF 193-31/18 PR-31/1919 SIMT - 1910 BRPF 19-31/1916 61/15 CMF 1910 1910 MIND B VIGHNERF S-- # 1 CB COT PSU - # (P) FSM FR UND COT I # - S OFF 31/15 CMF 193-31/15. SDG 1 GOM A 9AKGOT SIMO SIMOT S-- 1810 CMF 193-31/15.)g@sPgB

, . VPin gy@As@f3IfI mse PVFA3m@vmPfCgfl3e86 vm fvnl3yu s@mo

- Ggmgysén 3u u gm®
- Imsé CAséVgPReP
- hRyß s@fn3mg3efrwu væ

	kseef Pvingditif CgfsRC3y4gd PvinsGygPfinDAsQditge6B EquAg3mAfPvinmf.sPftggn
	sPftggmfgegAg3n
Signatories	,. MPf OBARugmoCt.sF
NI, I fl AAygOAgOfrst 3ys@yifbTF	-

	Accreditation Category	Mge 3Rymgfsn8y smAP	Mget 3 Rymgf SnBy smAP	Mget 3 Rymgf SnBy smAP	INPC Mgd 3RyngfXy smAP
isyygd3R&nfA3u - eeniAgf6 vCf-y8AgGRygHP-gAlugdYnfT1fn I Vf; syd11B	Position	hgm8yf9n8y smAfn.gu vPC	MgGeFf, gsu frgsOgy	rst3ys@yifn33yOms@y	hgm8yfhgu WB&@ef9ARyRu gmthn. gu vPC
AsyygG3R@mfA3u - esmAgf6 vC	Signatories	cvern/figymsmO3	EyvAfn.sR	Hgyu smfr vm	NsmAifd sm

Environmental Division Melbourne Part of the ALS Laboratory Group

I AAygOkgGl3yfA3u - esmAgf6 vCf

®X/Œnflj 0TFB

WORLD RECOGNISED ACCREDITATION

s AAyg Ove Comming a Raygu gmOPB

, . VFGSARu gm@AFVPPRgGVmf sAA3yOsmAgf6vCfNI, If 4fd gRS@VCh-ym DsgfJSnfl RFgsesfYij1 He-6-31559Amm800 fl sxI991@@F4afa801ffwww8rsg+bba-fbot A Campbell Brothers Limited Company



o ENJ S∕XNMEN, I rfEl V, Hfhn ÆNn Eh o T100j 4fl r2EV, f. I VKfGI hd XVKh o EM1104FFafl u gmQu gmCt d 3/kfXyOgy : yazaAC n egmC

General Comments

. gfsnseiowsei-yayachygling Rhydrif CgfEnnbygnu gmaeic Ob Ranf. sDgftggming Ob 1900 fgRater) gd vmgynscomseifyak? mwydd-yaydgmyr Rhyfs Rhydr 1 fcgf7hE: lipil hild lipil nid NE: MB Shf. 3 Rhy Ogloge-gG-y8AgORygPfsygfgu - ei gOfmfCgfst PgmAgf3lf03ARu gm@OFGmCsyOPf3yft i fAegm@ygqRgPrB

- d. gygfu 3/PBygfOg@yu vns@mf. sPft ggmf-gyl3yu gOdygPPaBFsygfyg-3y@O'3mfsfOyi f6 gv. @ sPAB
- d. gygfsfyg-3ygGremrCsrrf(<)fygRred F. v. gyfCsrrfCgfr XVpfCrPrusi it gfCRgfGf-yusy Rau efgxysAdOvgRsQfOrRomsmO3yfvnRrugmaRau eff3yfsmae RR
- d. gygfcgfr XV31sfgg-3ygGygPR@Ollgyfflybu fPSmCsyGr XVfcVFu si ft gfGgfGfr v. fu 3xFgygfA3m@mfpFhAygm?su eff(ygGRygG6gv. @gu &i gO/3yfu syxfm@yggmAgB
- d. gnifteu em fou gfwildyn s Gamffins G. y Chagalt i fo gfwegnigteu em fo Gaffs ydfP. 36 nifo (C3ROs fou gfAdu 3mgmodf Saff of gifAdu gfAdu 3mgmodf Saff og gifAdu gfAdu 3mgmodf Saff og grifs Pagy fou gfAdu gamen Fry 3mgmodf Saff og grifs Pagy fildy Frank from from from 18 of 3mgmodf Saff of 18 of 2mgmodf Saff of 2mgmodf Saff of 2mgmodf Saff of 18 of 2mgmodf Saff of 2mgmodf Sa
- n InfNR tgyfni Infig NG fnna tgyfygu fogtspyfu syngwygdtin. gu vaelit Poskoth gydagner, gin. gu vaelit Roskoth gydagnering ya vaenskang an ya en syn fnna tgyfnafodd a gyafnafod og syn r XVf=fr vu vE3Lfyg- 3y@m Kgi fo
- ^f=f, . PhysPR&PFA3u RgOtly3u fmODOPs és ms é gfOg@A@mFfs@3yfst 3DpfC gf@Dpé3lfyg-3y@m
- 50/A11: Hhis reporVhas been at eNded aNd re8re-eased Vo a+ow Vhe reporVNg of addiVoNa+aNa+yVca+daVa6
 - EP09A: Co-cling Vit e fai-ed for EM1104AAmd7e Vo iNappropria Ve preser (ed bo Werecei (ed 6
-) ESu un Hu:
- InMvSE 1:) TESu pC: ABr8x) TESu HEMv: j 1690
- I nMvSE j:) TESu pC: 39 Ax) TESu HEMv: j 1690
- To Nic ba+en Noes were carc? Hand 7 sing: ta,or an ion 18 Sch-oridexa 4/a 4/nily, and s? 4/a 4/e; and ta,or ca Vons 8 carc i7 tatagnes i7 tapoles si7 tasod i7 tand at to Nia 6
- lat p-eswere fi+kered Whro 7gh a 064 A7t fi+ker prior No Whe disso+(edte-Na+saNa+ysis6



:sg d3ykfXyOgy : yazgAC n egmC

o Yf3Lfb o EM1104FFaff u gmOu gm©tl o ENJS/XNMEN, I rfEl V, Hfhn ŒNn Eh o T100j 4ff r2EV, f. I VKfGl hd XVKh

Analytical Results

h Rt @/s Gw: Wn HEL		Clie	Client sample ID	GW2	GWj 3			
	Clie	nt samplir	Client sampling date / time	0T@II U@011f1Fo00	0T@11 U@011f1F@0			
Compound	CAS Number	LOR	Unit	EM1104AAn8001	EM1104AAn800j	888	888	8888
En 00 A: pC								
pC Ra#e		0801	- Hf7 mC	36 4 j	3610			
En 01A: HoVá+u isso + ed I o +ids								
^ Ho\a+uisso+(ed I o+ids D 190@	G\$\@10@10	Ь	n /r	1340	1240			
Eu052v: n ka iNy by v. HiVa\br								
Cydro°ide n +ka∔NiVy as . a. O5	c MX @10@01	-	u /r		<u>^</u>			
. arboNaVé n +ka +NIVy as . a. O5	Yb1T@T@	-	n /r	<u>\</u>	7			
BicarboNa\€ n-ka∔Ni\y as . a. O5	j 1@T@	_	u /r	33A	j 92			
HoVá+n-ka⁴NiVý as . a. O5		-	u /r	33A	j 92			
Eu041G: 1 74ate H7rbidit eVicZas I 04 j 8by un	oy un							
I 7-fa\e as I O4 8H7 rbidit eVic	14b0b@a@	-	n /r	Ajį	503			
Eu04AG: . h•oride uiscre\é aNa+vser								
. h•oride	18bbj @ 0 @	-	u /r	j1j	A34			
Eu0π5) : uisso⊬ ed Ma,or . aVoNs								
. atci7t	j 440@0@	-	u /r	42	93			
MagNesi7t	j 4Ya@F@	-	u /r	5A	3m			
l odi7t	j 440@Y@	-	u /r	j 22	43m			
voVássi7t	j 440@a@	1	u /r	6	6			
EG0j 0) : uisso+(ed MeVa+s by T v aMl								
n-ft iNi7t	j 4Ta@0@	0801	u /r	<01801	<0801			
nrseNic	j 440@b@	0001	u /r	00094	00059			
. adt i7t	j 440@Y@	0E0001	u /r	<080001	<010001			
. oba⁴V	j 440@b@	0001	u /r	<0001	06013			
. opper	j 440@0@	0001	u /r	<0001	<08001			
Sead	j 4Ya@T@	0001	u /r	<08001	<08001			
Manganese	j 4Ya@8@	0001	u /r	06159	1612			
l icke+	j 440@T@	0001	u /r	0000	0 @ 0m			
I e-te Ni7t	j j bT@a@	0801	u /r	<01801	<0801			
KINC	j 440 @8@	OBOF	u /r	0 @ j 3	<0B0F			
BoroN	j 440@T@	OBOF	u /r	0694	090			
ToN	j 4Ya @ a@	OBB	u /r	08Ij	<0B0F			
EG05A): uisso+(ed Merc7ry by) TMI								
Merc7ry	j 4Ya@j @	0E0001	u /r	<050001	<050001			
EG0A0): uisso+(ed Ce°a(a+eNV. hrot i7t								
Ce°a(a+eNV. hrot i7t	1bF40@a@	0801	u /r	<0图1	<01801			
EP0j AG:) ree cyaNide by uiscreVe n Natyser								
) ree . yaNide		00004	u /r	<00004	<0图04			
EP0j 3G: HoVa+. yaNide By uiscreVe nNa+yser	er							

A Campbell Brothers Limited Company



:sg d3ykfXyOgy : yazgAC

n egmC

o 4f3ltb o EM1104FFafl u gmOu gm©tl o ENJ S/XNMEN, I rfEl V, Hftnn ŒNn Eh o T100j 4fl r2EV, f. I VKfGl hd XVKh

Analytical Results

•								
h Rt@ds Gw: Wn HEL		ĊĬį	Client sample ID	GW2	GWj 3			
	Clie	nt sampli	Client sampling date / time	0T@NIU@011f1F000	0T@N U@011f1F@0			
Compound	CAS Number	LOR	Unit	EM1104AAn8001	EM1104AAn800j	88	88	8888
EP0j 3G: HoVa+. yaNide By uiscre\e n\a+yser 8. oNVN7ed	8. oNVN7ed							
Ho\a+. yaNide	Fj @T@	00004	u /r	06042	0000A			
EP0j9G: Weak ncid uissociab+e. yaNide By uiscre\ennahyser	uiscreVe n Na	+yser						
Weak n cid u issociabte. ya Nide		0004	u /r	<01304	<0B04			
EP040v:) # oride by v. HiVa\brace								
) #oride	18ab4@b@	08	u /r	164	80			
EPOAAG: nt t o Nia as I by uiscre Ve n Natyser								
nt to Nia as I	j 884@1@	0.000	u /r	11j	0618			
EP0A2G: 1 iViVe as 1 by uiscreVe nNa+yser								
l iViVe as I		0.000	u /r	0001	0001			
EP0A9G: I iVa\& as I by uiscre\& nNa+yser								
^ I iYa\e as I	14j aj @F@	0.000	u /r	<01801	090			
EPOAnG: I iVive p4s1 iVave as1 HO°Z by u	H O°Z by uiscreVe n Natyser	/ser						
l ivite - I ivate as I		0.000	u /r	0001	0671			
EP021G: LeacV(e vhosphor7s as v by discreVe aNa-yser	eVe aNa+yser							
LeacV(e vhosphor7s as v		0.000	n /r	<01801	<0801			
EP09AM: I 7-fide as I j 8								
l 7-fide as I j 8	1b4a8 @F®	08	u /r	<0Bl	<0Bl			
El 0AA: ToNic Batance								
^ Hote+n NioNs		0.000	n gd/r	j 460	096 Í			
^ Ho\a+, aVoNs		01301	n gg/r		50eA			
HoVa+. aVoNs		0801	n gg/r	j Agt				
^ ToNic Barence		01801	%		460			
To Nic Batance		0.000	%	j O vj				
Ev 024n: MoNocyc+ic nrot aVc CydrocarboNs								
I WreNe	100@T®	ш	h /r	₩	₩			
Espropy-benzene	ab@T@	ட	h /r	₩	Ψ,			
N8/ropy-tbeNzeNe	10Y@F@	ш	h /r	₩	Ľ.V			
1666/84rit eVhy+beNzeNe	10b@i @	ш	h /r	₩	Ľ.V			
sec8B7W-tbeNzeNe	1YF@b@	ш	h /r	₩	₽			
16 6484rit eVhy+beNzeNe	aF@Y@	ш	h /r	₩	Ľ.V			
VérV8B7Vy-tbeNzeNe	ab@8@	ш	h /r	4	₽			
p8Eopropy-46-FeNe	aa 📵	L	h /r	₽	₽			
NB7 W-benzene	104@1@	ч	μ /r	₹>	4≻			
Ev 024B: O° ygeNa\ed . ot po7 Nds								
RiNy+nce\a\&	10b@F@	F0	h /r	<f0< th=""><th><f0< th=""><th></th><th></th><th></th></f0<></th></f0<>	<f0< th=""><th></th><th></th><th></th></f0<>			
j 837 VANONE FMEPZ	j b @ Y@	F0	μ /r	<f0< th=""><th><f0< th=""><th></th><th></th><th></th></f0<></th></f0<>	<f0< th=""><th></th><th></th><th></th></f0<>			



: s g d 3)kfXyOgy

: yazgAC n egmC

o Ff3ltb o EM1104FFafl u gmOu gmCtl o ENJ S/XNMEN, I rfEI V, Hftnn ŒNn Eh o T100j 4fl r2EV, f. I VKfGI hd XVKh

Analytical Results

•								0
h RŁ @is ŷx: Wn HEL		O	Client sample ID	GW2	GWj 3			
	Clie	nt samp	Client sampling date / time	0T@NIU@011f1F000	0T@II U@011f1F@0			
Compound	CAS Number	LOR	Unit	EM1104AAn8001	EM1104AAn®00j	***	888	8888
Ev 024B: O° ygeNaVed . ot po7 Nds 8. oNMN7ed	N7ed							
48MeVhy-6 spenvanone FMTBPZ	100000	F0	h /r	<f0< th=""><th><f0< th=""><th></th><th></th><th></th></f0<></th></f0<>	<f0< th=""><th></th><th></th><th></th></f0<>			
j 8Ce° aNoNe FMBPZ	Fa1@b@	F0	h /r	<f0< th=""><th><f0< th=""><th></th><th></th><th></th></f0<></th></f0<>	<f0< th=""><th></th><th></th><th></th></f0<>			
Ev 024.: I 7-foNated. ot po7Nds								
. arboN dis7 ⊀ide	j F@F@	ш	μ /r	4	₽			
Ev 024u:) 7t igaNs								
j g &uich toropropaNe	Fa4@0@	ш	h /r	4	4≻			
1g Buich toropropaNe	j b @	ш	h /r	₹	4≻			
cis81668u ich toropropyte Ne	10081@1@	ш	n /r	₽	₽,			
V≠aNs8l66&uich+oropropy+eNe	10081@T@	ш	n /r	₽	₽>			
16 Buibrot oe Walke FEU BZ	108個Y@	ш	h /r	₹	4≻			
Ev024E: CatogeNaVed ntiphaVc. ot po7Nds	Nds							
uich+orodif4orot eVhaNe	j F@1	P0	h /r	<f0< th=""><th><f0< th=""><th></th><th></th><th></th></f0<></th></f0<>	<f0< th=""><th></th><th></th><th></th></f0<>			
. h-torot eVhaNe	j 4 @	P0	h /r	<f0< th=""><th><f0< th=""><th></th><th></th><th></th></f0<></th></f0<>	<f0< th=""><th></th><th></th><th></th></f0<>			
RiNy+ch+oride	j F@1@	P0	h /r	<f0< th=""><th><f0< th=""><th></th><th></th><th></th></f0<></th></f0<>	<f0< th=""><th></th><th></th><th></th></f0<>			
Brot ot eVhaNe	j 4@Y@	9	h /r	<f0< th=""><th><f0< th=""><th></th><th></th><th></th></f0<></th></f0<>	<f0< th=""><th></th><th></th><th></th></f0<>			
. h-toroe VhaNe	j F@0@	9	h /r	<f0< th=""><th><f0< th=""><th></th><th></th><th></th></f0<></th></f0<>	<f0< th=""><th></th><th></th><th></th></f0<>			
Hrich+orof쥐orot eVhaNe	j F@a@	9	h /r	<f0< th=""><th><f0< th=""><th></th><th></th><th></th></f0<></th></f0<>	<f0< th=""><th></th><th></th><th></th></f0<>			
1618uich+oroeVheNe	j F@F@	ш	h /r	4≻	4≻			
Todot eVhaNe	j 4 @ o@	ш	h /r	ح⊱	4≻			
VaNs8I∯ &⊔ich+oroeVheNe	1F8@0@	ш	h /r	₹	4≻			
1618uich+oroeVhaNe	j F@4@	ш	n /r	₽	4≻			
cis816 8u ich toroe We Ne	1F8@a@	ш	h /r	₹≻	4≻			
16161 8-trich-toroe VhaNe	j 1@F@	ш	h /r	Ą	4≻			
1618uich-oropropy-eNe	F8Y@b@	ш	h /r	₹>	4≻			
. arboN HeVfach+oride	F8@Y@	ш	n /r	₽	₽>			
16 8uich-toroe Vha Ne	10j @ 8@	ш	h /r	Ą	4≻			
Hrich-toroe/freNe	j a@1@	ш	h /r	₹	4≻			
uibrot ot eVhaNe	j 4 @ F@	ш	n/r	₽	₽			
1616 8-trich-toroe VhaNe	j a 🚳 🛞	ш	h /r	₹	4≻			
1668uich toropropaNe	147@0@	ш	h /r	₹>	4₽			
HeVrach-toroeVheNe	1Tj @b@	ш	h /r	₹>	4≻			
161616, 8HeVrach+oroeVhaNe	8Y0@0@	ш	h /r	₹	4≻			
VaNs81648uich+orog 8b7\eNe	11000	ш	h /r	₹>	4≻			
cis8164& ich+orog 807\eNe	14j 8@1@	ш	h /r	₹>	4≻			
1616) 6 8HeVrach+oroeVhaNe	j a@4@	ш	n /r	₽	4≻			
1g 668-irch-oropropaNe	a8@b@	ш	h /r	₹	4≻			
veNVach+oroeVhaNe	j 8@1@	ш	n /r	₽	₹>			
16 & librot o & & horopropaNe	a8@T@	ш	μ /r	Υ.	₽			



:sg d3ykfXyOgy

o 8f3l£b o EM1104FFaff u gmOu gm©tl o ENJS/XNMEN, I rfEl V, Hfhn ŒNn Eh o T100j 4ff r2EV, f. I VKfGl hd XVKh

n egmC : y8zgAC

Analytical Results

h Rt @ ls Gw: Wn HEL		Ö	Client sample ID	GW2	GWj 3			
	Clie	nt sampl	Client sampling date / time	0T@NI U@011f1F000	0T@11 U@011f1F@0			
Compound	CAS Number	LOR	Unit	EM1104AAn8001	EM1104AAn800j	888	***	8888
Ev024E: Ca+ogeNaVedn+iphaVc. ot po7Nds8. onVNRed	oNVN7ed							
Ce° ach torob7\text{\text{dieNe}}	bj @	ш	h /r	4	4≻			
Ev024): Ca+ogeNaVed nrot aVc. ot po7Nds								
. h•orobeNzeNe	100億0億	ш	h /r	4	4≻			
Brot obeNzeNe	10b@8@	ш	h /r	Ψ,	4			
j8 htorotoffeNe	aF@a@	ш	h /r	₩	4			
48 hもroV6 ff eNe	108@Y@	ш	h /r	₩	٩			
168uich-torobeNzeNe	F41@Y@	ш	h /r	₩	4			
1648uich+orobeNzeNe	108國8個	ш	h /r	4	₹			
1g &uich+orobeNzeNe	aF@0@	ш	h /r	4	₹			
16 648-frich-torobenzene	1T0@T@	ш	h /r	4	₹			
16 668-frich-torobenzene	bj @	ш	h /r	4	₹			
Ev024G: Hriha+ot eVhaNes								
. h-torofort	8) @8@	ш	h /r	4	4≻			
Brot odich-orot eVhaNe	j F@i	ш	h /r	4	₹			
uibrot och+orot eVhaNe	1T4@b@	ш	h /r	√F	∠ F			
Brot ofort	j F@F@	Ц	h /r	₹	<f< th=""><th></th><th></th><th></th></f<>			
Ev02AH TMZB: vo+yN7c+earnrot aVc CydrocarboNs	sNod							
I aphVha+eNe	a1@0@	189	h /r	m@l	<180			
n ce Naph Vhy te Ne	T0b@8@	1	h /r	<180	<1 B 0			
nceNaphVheNe	рҮ@Т@	189	h /r	168	<118			
) 4 oreNe	₽8@ Y@	189	h /r	164	<180			
vheNaNVireNe	bF@1@	180	h /r	164	<118			
n MhraceNe	1T0@T@	189	h /r	<180	<118			
) 4 orannene	T08@4@	189	h /r	<180	<118			
vyreNe	1Ta@0@	189	h /r	<180	<118			
BeNzFaZaNfvraceNe	F8@F@	180	h /r	<180	<118			
. hryseNe	T1b@1@	189	h /r	<180	<118			
BeNzofb.7ff oran\ne\ne	T0F@a@	1	h /r	<180	<180			
BeNzoRÆ4oraNNeNe	T0j @c@	189	h /r	<180	<118)			
BeNzoRaZpyreNe	FO@T@	0 B	h /r	£ 0>	-90			
NdeNoFig 66cd 2byreNe	1aY@a@	1	h /r	<180	<180			
uibeNzFathZaNNrraceNe	FY@0@	189	h /r	<180	<180			
BeNzoFg6n6Zpery+eNe	1a1@4@	189	h /r	<180	<118			
^ I 7t of po+ycyc+tc arot aVc hydrocarboNs		H 0	n/ n	158	- 189 - 189			
Ev 090/021: HoVa+veVro+e7t CydrocarboNs								
. 3 8. m) racVoN		10	h /r	<t0< th=""><th><70</th><th></th><th></th><th></th></t0<>	<70			
. 10 8. 14) racVoN		F0	h /r	<f0< th=""><th><f0< th=""><th></th><th></th><th></th></f0<></th></f0<>	<f0< th=""><th></th><th></th><th></th></f0<>			

A Campbell Brothers Limited Company



s g d 3)kfXyOgy

: yazgAC n egmC

oj f3ltb o EM1104FFaff u gmOu gm©tl o ENJ S/XNMEN, I rfEI V, Hfhn ŒNn Eh o T100j 4ff r2EV, f. I VKfGI hd XVKh

Analytical Results

h Rt @Is Gw: Wn HEL		Clie	Client sample ID	GW2	GWj 3			
	Clie	nt samplin	Client sampling date / time	0T@/II U@011f1F000	0T@11 U@011f1F@0			
Compound	CAS Number	TOR	Unit	EM1104AAn8001	EM1104AAn800j	88	8	8888
Ev 090/021: HoVa+veVfo+e7t CydrocarboNs 8. oNVN7ed	. oNVIN7 ed							
. 1A8. j 9) racVoN		100	h /r	0 [[120			
. j m8. 53) racVoN		9	µ /r	30	06			
^ . 10 8. 53) racVoN Fs7t Z		9	µ /r) 90	J A0			
Ev 090/021: HoVá+Leco(erab+e CydrocarboNs 81 Ev M j 010 urafv	s 81 EvM j 010	urafV						
. 38. 10) racVoN		T0	h /r	<t0< th=""><th><t0< th=""><th></th><th></th><th></th></t0<></th></t0<>	<t0< th=""><th></th><th></th><th></th></t0<>			
^. 38. 10) racVoN t iN7s BHEX F) 1Z		2	h /r	<t0< th=""><th><70</th><th></th><th></th><th></th></t0<>	<70			
>. 10 8. 13) racVoN		100	h /r	<100	<100			
>. 13 8. 54) racVoN		100	h /r	j 50	j 10			
>. 54 8. 40) racVoN		100	μ /r	<100	<100			
^ >. 10 8. 40) racVoN Fs7t Z		100	µ /r	j 50	j 10			
Ev 090: BHEXI								
BenzeNe	j 1@Y@	1	μ /r	<1	-			
Ho-# eNe	10b@b@	_	h /r	-	>			
EVfy-be NzeNe	100@1@	_	μ /r	-≺-	>			
t eVa8& para®Ky+eNe 10b@	10b歐極108處丁歐	_	h /r	Ļ	۲			
or/ho8/y-eNe	aF@ @	_	h /r	_>				
^ HoVa+Xy+eNes	17Y00000	⊢	μ /r	-≺	_≻			
^ I 7t of BHEX		_	μ /r	<1	1>			
I aphVha+eNe	a1@0@	ш	μ /r	₹	₽			
Ev 0241: RO. 17rrogatés								
16 8uich+oroeVhaNe8u4	1j 080@j @	0BI	%	nj 60	9m69			
Ho-#reNe&19	T0Yj @8@	08	%	mm@	9A8m			
488rot of 4 orobeNzeNe	480@0@	0BI	%	mAGS	9381			
Ev02AH TMZ : vheNo+ic. ot po7Nd I7rrogaVes	(es							
v he No-ed3	1Y1Tj @b@	08	%	1169	j 169			
j8 h•oropheNo+8u4	aYaF1@Y®	08	%	4n@	A96n			
j 6468 8-hribrot opheNo+	11b@a@	08	%	5n 6 l	238			
Ev02AH TMZH: vnCI7rroga\es								
j 8 forobipheNy+	YT1@0@	0BI	%	4A64	9A@m			
n NifraceNe&110	1j 1a @ 8@	08	%	AA®	2j @			
48HerpheNy-18d14	1j 1b@1@	0Bi	%	A06I	250			
Ev 0901: Hv CRZBHEX I 7 rrogates								
16 8uich+oroeVhaNe8u4	1j 080@j @	0BI	%	m#63	nj 64			
Ho-FreNe 8u 9	T0Yj @8@	08	%	nj 61	2m64			
488rot of 4 orobeNzeNe	480@0@	08	%	m160	906			





s g d 3)kfXyOgy

: y8zgAC n eggmC

o bf3lfb o EM1104FFafl u gmOu gmCtl o ENJ S/XNMEN, I rfEI V, Hfhn ŒNn Eh o T100j 4fl r2EV, f. I VKfGI hd XVKh

Surrogate Control Limits

hR @sogk: Wn HEL		Recovery Limits (%)	Limits (%)
Compound	CAS Number	Low	High
Ev 0241 : RO. 1 7 rroga\(\rhe\rhs\)			
1g &uich+oroeVhaNe&u4	1j 080@j	Ţί	111
Ho-7 eNe 8.19	TOY] @8@	j 4	1Tb
48Brot of 4 orobeNzeNe	480@0@) o	111
Ev02AFTMZ: vheNo+ic. ot po7Nd l7rrogaNes			
v he No-8d3	1Y1Tj @b@	10	Ъ
j8 h•oropheNo+6u4	aYaF1@Y®	10	1T4
j 6468 8-hribrot opheNo+	11b@a@	18	1Yb
Ev02AH TMZH: vnCl7rroga\es			
j 8 귀orobipheNy+	YT1@0@	₹	Щ.
n NifraceNe&110	1j 1a @ 8@	γ4	178
48HerpheNy+8d14	1j 1b@1@	74	140
Ev0901: HvCRZBHEXI7rroga\s			
16 8uich+oroe Walve 8u4	1j 080@j @	Ϋ́	1
Ho-FreNe&u9	TOY] @8@	Τĺ	174
48Brot of Front or the second of the second	480@0@	j 0	118

				_
	2	d	1	n
₫	٤	4	١,	4
0	`	۹	ŀ	⋖
			•	-

CHAIN OF CUSTODY

ALS Laboratory: please tick >

II Sydney 277 Wootbak Rd. Smithlead NSW 2176
Phy Co 2776 - 6355 E samplion sydneydd gabrawlu cun II Newcartla 5 Roscan Rd. Meriatock NSW 2304
Ph.02.2898 9433 E samplion.nowcasta@alamwu.com

El Brisbane 22 Stead St. Saferd QLD 4053
Phy 7 222 Estamptois brokening lapanive com
C. Townsaffer 415 Cerna Ct. Bahle QLD 4518
Ft 07.4796 0500 E. bunasite encounterini@alexano.com

Melbourne, 2-4 Wentall Rd. Springuete VIC 3171
Ph. 38 3519 8 9500 E. servicine, melbourne@aleanwo.com
 Madalelder, 2-1 Birme Rd. Pozeika SA 5055
Ph. 08 8359 0890 Eleafelerle@aleanwo.com

L Peath; 10 Food Way, Malinga WA 8090
Ph. 08 2020 #785 E. summiscason Markinswa com
L Lanimostom; 27 Weilingan St. Luurinestom 1AS 7250
Ph. 08 0831 2168 E. launopalent@atenminc.com

(2	No N/A	٠	Ç	BY:	1	1	5		ıformation	,77	vision	
(Circle)	\$ (in receipt? (Yes)!	50	はけれ	REGENTED BY:	F	DATE/IME	50	`	Additional Information		Environmental Division	
FOR LABORATORY USE ONLY (Circle)		Free Ice / figzen ice bricks present upon receipt?	Random Sample Temperature on Receipt:									Envi	
BORATO	Custody Seal Intact?	an los b	Sample Ten	ment	D BY:					suite price)	Sample Temp	21.80	
FORLA	Sypone	Free Ice	Random	Other comment	RELINQUISHED BY:		DATE/TIME:			led to attract	Aq elqme&	5,98	
					REI		DA			nust be list olived (field fi	TPH/BTEX/PAH Plus VOC	×	
										Codes r	Hexavalent Chromium W-10 Package -	×	
		COC SEQUENCE NUMBER (Circle)								ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metab are required, specify Total (unflined bottle required) or Dissolved (fleat filtered bottle required).	Dissolved metals - AI, As, Cd, Cu, Fe, Pb, NI, Zn, Co, Se, B, Mn & Hg (lab to centrifuge, filter and scidify from red/green metals bottle)	×	
		COC SEQUENCE	9	ĸ						EQUIRED Includin	bleft bns Hq bleft) - muinommA - 4HV femperature must be recorded)	×	
			3 4	3 4	D BY:		Æ:			ALYSIS RE Where Metal	NT-3 Package - NO2, NO3, FI, Reactive P	×	
	e date):		1 2	1 2	RECEIVED BY:		DATE/TIME:			ANA	NT-2 Package - Cl, SO4, AIK	×	
:(e	(List du		8	ŏ	œ						NT-1 package - Ca, Mg, Na, K	×	
due dat	ent TAT				7		1 10:30	8			pH, TDS, Free Cyanide, Total cyanide, WAD cyanide, Sulphide	×	
TAT (List	idard or ung				(ED BY: D		ME: 3/5/2011 10:30am	0.0250			TOTAL	80	
TURNAROUND REQUIREMENTS: Standard TAT (List due date):	(Standard TAT may be longer for some tests	ALS QUOTE NO.: ME/015/11 V3		796	SAMPLER MOBILE: 0437 033 796 RELINQUISHED BY: DJ	EDD FORMAT (or default): ENMRG & ESDAT	AFFICE			CONTAINER INFORMATION	TYPE & PRESERVATIVE (refer to codes below)		
TURNARO	Standard TA	ALS QUOT		CONTACT PH: 0437 033 796	BILE: 043	(or defaul					MATRIX		
	_ e			ACT PH	LER MC	ORMAT							
				CONT	SAMP	EDD	listed):	listed):	Ĭ.	SAMPLE DETAILS MATRIX: Solid(S) Water(W)	DATE / TIME	2/05/2011	
arth Sciences	OFFICE: P.O.BOX 2253, FOOTSCRAY, VIC, 3011	PROJECT: 210074 ALBERT PARK GAS WORKS		VID JAMES		(ON /	Email Reports to (will default to PM if no other addresses are listed):	Email Invoice to (will default to PM if no other addresses are listed):	COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:	SAMPLE MATRIX: Sol	SAMPLE ID		
mental E	(2253, F	4 ALBER		GER: DA		S7 (YES	ill default t	II default to	AL HAND	12.4		GW7	
CLIENT: Environmental Earth Sciences	OFFICE: P.O.BOX	PROJECT: 21007	ORDER NUMBER:	PROJECT MANAGER: DAVID JAMES	SAMPLER:	COC emailed to ALS? (YES / NO)	Email Reports to (w	Email Invoice to (wi	COMMENTS/SPECI.	ALS USE ONLY	LABID	-	

Telephone: +61-3-8549 9600

EM1104559

(a red 3/5/11 3:50 Peter





Environmental Division

QUALITY CONTROL REPORT

: 1 of 16	: Environmental Division Melbourne : Carol Walsh : 6 Westall Rd S4ringvale VIC Australia 31p1	: carol.z alshj alsenviro.com : w+17378569 9+08 : w+17378569 9+01	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement : 037MAYZ011 : 107MAYZ011	: 2
Page	Laboratory Contact Address	E7mail Tele4hone Facsimile	QC Level Date Sam4les Received Issue Date No. of sam4les received	No. of sam4les analysed
: EM1104559	: ENVIRONMENTAL EARTH SCIENCES : MR DAVID JAMES : P.O.BOX 2253 FOOTSCRAY VIC, AUSTRALIA 3011	: d-amesj eesi.bi@ : w+1 9+8p1+++ : w+1 03 9+8p1866	: 2100p6 ALBERT PARK GASWORKS : 777 : 777 : 777	: ME/015/11 V3
Work Order	Client Contact Address	E7mail Tele4hone Facsimile	Pro-ect Site C707C number Sam4ler Order number	Quote number

This redort sudersedes any drevious redort(s) zith this reference. Results addly to the samdle(s) as submitted. All dages of this redort have been checked and addroved for

This Quality Control Re4ort contains the follozing information:

- Laboratory Du4licate (DUP) Re4ort; Relative Percentage Difference (RPD) and Acce4tance Limits
- Method Blank (MB) and Laboratory Control S4ike (LCS) Re4ort; Recovery and Acce4tance Limits
- Matrix S4ike (MS) Re4ort; Recovery and Acce4tance Limits

Signatories This document has been electronically signed by the authori@d scarried out in com4liance z ith 4rocedures s4ecified in 21 CFR Part 11. Signatories	Senior Inorganic Chemist Metals Team Leader Senior Semivolatile Instrument
Signatories This document has been electronically signed by the author carried out in com4liance z ith 4rocedures s4ecified in 21 CFR Part 11. Signatories	Dilani Fernando Eric Chau Nancy Wang
NATA Accredited Laboratory 825 This document is issued in accordance z ith NATA	accreditation requirements. Accredited for com4liance z ith ISO/IEC 1p025.
NATA	WORLD RECOGNISED ACCREDITATION

	carried out in com4liance z ith 4n	carried out in com4liance z ith 4rocedures s4ecified in 21 CFR Part 11.	
	Signatories	Position	Accreditation Category
	Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
	Eric Chau	Metals Team Leader	Melbourne Inorganics
_	Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics
	Enuironme	Environmental Division Melbourne	

signatories indicated beloz. Electronic signing has been

6 Westall Rd S4ringvale VIC Australia 31p1 Tel. +61-3-8549 9600 Fax. w+173/78569 9+01 www.alsglobal.com Part of the ALS Laboratory Group

A Campbell Brothers Limited Company



: ENVIRONMENTAL EARTH SCIENCES 2100p6 ALBERT PARK GASWORKS EM1106559 : 2 of 16 Work Order Proect Client

General Comments

The analytical 4rocedures used by the Environmental Division have been develoded from established internationally recogni@d 4rocedures such as those 4ublished by the USEPA, APHA, AS and NEPM. In house develo4ed 4rocedures are em4loyed in the absence of documented standards or by client request.

Where moisture determination has been 4erformed, results are re4orted on a dry z eight basis.

Where a re4orted less than (<) result is higher than the LOR, this may be due to 4rimary sam4le extract/digestate dilution and/or insuffient sam4le for analysis.

Where the LOR of a redorted result differs from standard LOR, this may be due to high moisture content, insufficient sam4le (reduced z eight em4loyed) or matrix interference.

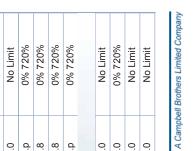
Anonymous = Refers to sam4les z hich are not s4ecifically 4art of this z ork order but formed 4art of the QC 4rocess lot Key:

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

LOR = Limit of re4orting

RPD = Relative Percentage Difference

= Indicates failed QC





ENVIRONMENTAL EARTH SCIENCES 2100p6 ALBERT PARK GASWORKS Proect Client

3 of 16 EM1106559

Work Order

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Du4licate refers to a randomly selected intralaboratory s4lit. Laboratory du4licates 4rovide information regarding method 4recision and sam4le heterogeneity. The 4ermitted ranges for the Relative Percent Deviation (RPD) of Laboratory Du4licates are s4ecified in ALS Method QWI = Me No Limit; Result betz een 10 and 20 times LOR:70% 750%; Result > 20 times LOR:70% 720%.

Sub-Matrix WATED						Laboratory D	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005: pH (QC Lot: 1774124)	1774124)								
EM11065517001	Anonymous	EA005: 4H Value	Ш.	0.01	4H Unit	06'+	06'+	0.0	0% 720%
EM11065p1700+	Anonymous	EA005: 4H Value	Ш.	0.01	4H Unit	p.1+	p.18	0.3	0% 720%
EA015: Total Dissolve	EA015: Total Dissolved Solids (QC Lot: 1773871)								
EM11065597001	GWp	EA015H: Total Dissolved Solids j 180°C	GIS72107010	22	mg/L	1+60	1++0	1.6	0% 720%
EM11065927002	Anonymous	EA015H: Total Dissolved Solids j 180°C	GISZ107010	22	mg/L	000+	5890	1.9	0% 720%
ED037P: Alkalinity by	ED037P: Alkalinity by PC Titrator (QC Lot: 1773304)	304)							
EM11065607008	Anonymous	ED03p7P: Hydroxide Alkalinity as CaCO3	DMOZ107001	_	mg/L	^	<u>^</u>	0.0	No Limit
		ED03p7P: Carbonate Alkalinity as CaCO3	381273274	_	mg/L	1>	1 >	0.0	No Limit
		ED03p№: Bicarbonate Alkalinity as CaCO3	p175273	-	mg/L	38p	388	0.0	0% 720%
		ED03p7P: Total Alkalinity as CaCO3	<i>IIII</i>	-	mg/L	38p	388	0.0	0% 720%
EM11065617005	Anonymous	ED03p7P: Hydroxide Alkalinity as CaCO3	DMOZ107001	-	mg/L	^	^	0.0	No Limit
		ED03p №: Carbonate Alkalinity as CaCO3	381273274	-	mg/L	^	2	0.0	No Limit
		ED03p7P: Bicarbonate Alkalinity as CaCO3	p175273	-	mg/L	က	က	0.0	No Limit
		ED03p7P: Total Alkalinity as CaCO3	шш	_	mg/L	3	5	68.6	No Limit
ED041G: Sulfate (Tur	ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	A (QC Lot: 1774116)							
EM11065937006	Anonymous	ED061G: Sulfate as SO6 7Turbidimetric	168087978	1	mg/L	392	392	0.0	0% 720%
EM11065627001	Anonymous	ED061G: Sulfate as SO6 7Turbidimetric	168087978	-	mg/L	15p	1+3	3.8	0% 720%
ED045G: Chloride Discrete analyser	screte analyser (QC Lot: 1774138)	74138)							
EM11065627001	Anonymous	ED065G: Chloride	1+88p7007+	-	mg/L	2690	3020	19.2	0% 720%
EM1106562702p	Anonymous	ED065G: Chloride	1+88p7007+	_	mg/L	1p80	1+30	8.8	0% 720%
ED093F: Dissolved Major Cations	lajor Cations (QC Lot: 1774140)	1140)							
EM11065517001	Anonymous	ED093F: Calcium	D6607p072	_	mg/L	1>	1 >	0.0	No Limit
		ED093F: Magnesium	p63979576	-	mg/L	۲>	^	0.0	No Limit
		ED093F: Sodium	p66072375	-	mg/L	_	^	0.0	No Limit
		ED093F: Potassium	d/607099q	-	mg/L	^	^	0.0	No Limit
EM11065+9700+	Anonymous	ED093F: Calcium	D6607p072	_	mg/L	3+0	3++	1.p	0% 720%
		ED093F: Magnesium	p63979576	_	mg/L	1020	1030	8.0	0% 720%
		ED093F: Sodium	p66072375	_	mg/L	+2b0	0+d+	2.8	0% 720%
		ED093F: Potassium	d/607099d	-	mg/L	62p	630	0.p	0% 720%
EG020F: Dissolved M	EG020F: Dissolved Metals by ICP-MS (QC Lot: 1776768)	1776768)							
EM11065597001	GWp	EG020A形: Cadmium	p66076379	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A形: Arsenic	p66073872	0.001	mg/L	0.086	0.085	0.0	0% 720%
		EG020A <i>F</i> ∹Cobalt	p66076876	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A/F: Co44er	p66075078	0.001	mg/L	<0.001	<0.001	0.0	No Limit



ENVIRONMENTAL EARTH SCIENCES 2100p6 ALBERT PARK GASWORKS EM1106559 6 of 16 Work Order

Pro-ect Client

Recovery Limits (%) 0% 720% No Limit No Limit No Limit % 120% 3% 720% No Limit **RPD** (%) 69.2 0.09 12.3 13.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.6 0.0 0.0 3.6 . 7. 0.0 0.0 0.0 0.0 0.0 6. 0.0 0.0 0.0 0.0 0.0 Laboratory Duplicate (DUP) Repor Original Result Duplicate Result <0.0001 <0.005 <0.006 <0.006 <0.001 <0.001 <0.001 <0.006 <0.006 0.160 <0.001 0.009 <0.001 <0.0001 <0.0001 <0.006 0.00p 0.01p <0.01 <0.05 <0.01 0.82 0.11 0.36 <0.01 <0.01 0.159 0.25 0.8 +.0 0.01 <0.006 <0.006 <0.006 <0.006 <0.001 <0.001 <0.001 <0.0001 <0.0001 <0.006 <0.0001 0.015 <0.001 0.138 0.00p 0.02+ 0.02+ 0.168 <0.01 <0.01 0.86 0.12 0.001 0.31 <0.01 <0.01 0.01 0.8 ÷. mg/L Unit 0.005 0.0001 0.001 0.001 0.001 0.005 900.0 0.006 900.0 0.006 0.001 0.001 0.001 0.001 0.001 0.0001 0.006 0.006 0.001 0.05 0.05 0.0001 0.01 LOR 0.01 0.01 0.01 0.01 0.05 0.05 0.1 0.01 0.1 p63979p7+ p63979p7+ 1856072979 p66076379 p66076876 p66075078 p66070270 5p71275 5p71275 1+98676878 1+98676878 p63979+75 p66070270 P6607+74 p62978075 pp8276972 p66076278 p63978974 p66073872 063979271 p63979+75 p6607+7+ p62979075 pp8276972 p66076278 p63978974 p63979271 EK028G: Weak Acid Dissociable Cyanide EK028G: Weak Acid Dissociable Cyanide EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser (QC Lot: 1774001) EG050F: Hexavalent Chromium EK02+G: Total Cyanide EG020AF: Manganese EK02+G: Total Cyanide EG020A下: Manganese EK025G: Free Cyanide EK025G: Free Cyanide EG020A下: Aluminium EG020A下: Aluminium EG020F: Dissolved Metals by ICP-MS (QC Lot: 1776768) - continued EG020A下: Selenium EG020A下: Cadmium EG020AÆ: Selenium EK05pG: Nitrite as N EG020A/F: Arsenic EG020A/F: Co44er Method: Compound EG020AF: Cobalt EG020A/F: Nickel EK060P: Fluoride EG020A/F: Nickel EG020AÆ: Boron EG020AÆ: Boron EG035F: Mercury EG035F: Mercury EK060P: Fluoride EG020AÆ: Lead EG020A下: Zinc EG020A下: Zinc EG020AF: Iron EG020AÆ: Iron EK026G: Total Cyanide By Discrete Analyser (QC Lot: 1776357) EK025G: Free cyanide by Discrete Analyser (QC Lot: 1776352) EK057G: Nitrite as N by Discrete Analyser (QC Lot: 1774137) EG050F: Dissolved Hexavalent Chromium (QC Lot: 1778417) EG035F: Dissolved Mercury by FIMS (QC Lot: 1776767) EK040P: Fluoride by PC Titrator (QC Lot: 1773302) Client sample ID Anonymous GWb Laboratory sample ID Sub Matrix: WATER EM11066257006 EM1106+097002 EM11065627001 EM11065597001 EM11065987008 EM11065517001 EM11065517001 EM11065pp7008 EM11061807001 EM11061807011 EM110653+7001 EM11065597001 EM11065pp7001 EM11065257001



: 5 of 16 : EM1106559 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS Page Work Order Client Proect

Sub Matrix: WATER						Laboratory Du	Laboratory Duplicate (DUP) Report	,	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK057G: Nitrite as N	EK057G: Nitrite as N by Discrete Analyser (QC Lot: 1774137) - continued	Lot: 1774137) - continued							
EM1106562702p	Anonymous	EK05pG: Nitrite as N	ш	0.01	mg/L	0.02	0.02	0.0	No Limit
EK059G: Nitrite plus	s Nitrate as N (NOx) by Dis	EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 1774233)							
EM1106562700+	Anonymous	EK059G: Nitrite w Nitrate as N	11111	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM11065517001	Anonymous	EK059G: Nitrite w Nitrate as N	11111	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK071G: Reactive PI	hosphorus as P by discrete	EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 1774141)							
EM11065597001	GWp	EK0p1G: Reactive Phos4horus as P	Ш	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM11065+9700+	Anonymous	EK0p1G: Reactive Phos4horus as P	Ш.	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK085M: Sulfide as §	EK085M: Sulfide as S2- (QC Lot: 1773968)								
EM110660p7001	Anonymous	EK085: Sulfide as S27	1869+72578	0.1	mg/L	32.8	32.8	0.0	0% 720%
EM11066p57006	Anonymous	EK085: Sulfide as S27	1869+72578	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic	EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1776895)	QC Lot: 1776895)							
EM11065597001	GWp	EP0p6: Styrene	10076275	2	µg/L	~ 2	<5	0.0	No Limit
		EP0p6: Iso4ro4ylben@ne	9878278	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: n7Pro4ylben@ne	10374571	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: 1.3.57Trimethylben@ne	1087+p78	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: sec/Butylben@ne	13579878	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: 1.2.67Trimethylben@ne	957+37+	22	hg/L	\ \ \	<5	0.0	No Limit
		EP0p6: tert/Butylben@ne	+Z+QZ86	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: 47so4ro4yltoluene	42d&66	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: n.Rutylben@ne	106万178	2	µg/L	<5	<5	0.0	No Limit
EP074B: Oxygenated	EP074B: Oxygenated Compounds (QC Lot: 1776895)	(8895)							
EM11065597001	GWp	EP0p6: Vinyl Acetate	10870576	20	hg/L	<50	<50	0.0	No Limit
		EP0p6: 27Butanone (MEK)	p879373	20	hg/L	<50	<50	0.0	No Limit
		EP0p6: 67Methyl7274entanone (MIBK)	10871071	20	µg/L	<50	<50	0.0	No Limit
		EP0p6: 27Hexanone (MBK)	5917p87+	20	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated	EP074C: Sulfonated Compounds (QC Lot: 1776895)	1895)							
EM11065597001	GWp	EP0p6: Carbon disulfide	p571570	2	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 1776895)	(QC Lot: 1776895)								
EM11065597001	GWp	EP0p6: 2.27Dichloro4ro4ane	5967207p	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: 1.27Dichloro4ro4ane	p878p75	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: cis71.37Dichloro4ro4ylene	100+170175	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: trans7l.37Dichloro4ro4ylene	100+17027+	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: 1.27Dibromoethane (EDB)	10+79376	2	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenate	EP074E: Halogenated Aliphatic Compounds (QC Lot: 1776895)	C Lot: 1776895)							
EM11065597001	GWp	EP0p6: 1.17Dichloroethene	p573576	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: lodomethane	p678876	2	µg/L	<5	<5>	0.0	No Limit
		EP0p6: trans7l.27Dichloroethene	15+7+075	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: 1.17Dichloroethane	p573673	2	µg/L	<5	^2	0.0	No Limit
		EP0p6: cis71.27Dichloroethene	15+75972	2	µg/L	<5	<5	0.0	No Limit



: + of 16 : EM1106559	: ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS	
Page Work Order	Client Pro-ect	

2100p6 ALBERT PARK GASWORKS

Figure Compounds of Continued Contin										
F-73.767 F 1991 C C C C C C C C C	Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Part	:P074E: Halogenat	ed Aliphatic Compounds ((QC Lot: 1776895) - continued							
EPOPS 1.1 Zachiotocologlene 51-735 1981 45 1091 45 45 100 45 45 45 45 45 45 45	EM11065597001	GWp	EP0p6: 1.1.17Trichloroethane	p17557+	22	µg/L	^	<5	0.0	No Limit
E-Page Carbon Tetranslotted			EP0p6: 1.17Dichloro4ro4ylene	5+37587+	22	hg/L	<5	~ 2	0.0	No Limit
EPOPE EDOPE EDOP			EP0p6: Carbon Tetrachloride	5+72375	22	µg/L	^ 2	<5	0.0	No Limit
EPOPS: Lizarchiocratemen PSI2776 5 1991 < 5 5 5 5 5 5 5 5 5			EP0p6: 1.27Dichloroethane	10p70+72	22	µg/L	<5	^2	0.0	No Limit
EPOPS: Districtionserstates 107876 5 1991 45 45 40 40 40 40 40 40			EP0p6: Trichloroethene	p97017+	22	hg/L	<5	^2	0.0	No Limit
EPOPG: 11.27Techtocehame			EP0p6: Dibromomethane	p679573	2	µg/L	<2 2	\$	0.0	No Limit
EPOPS 1370chlootodvalene			EP0p6: 1.1.27Trichloroethane	570076q	22	hg/L	<5	² 2	0.0	No Limit
EPOPS Tetrachlocoeffice 1270765 5 1994 <5 <5 <0			EP0p6: 1.37Dichloro4ro4ane	16272879	22	µg/L	<5×	^2	0.0	No Limit
EPOpt: 1.1.17 etrachilocathane			EP0p6: Tetrachloroethene	12p71876	2	hg/L	<5	² 2	0.0	No Limit
EPop6: Itans7 & StDichlorocalZulene 1105pp 5 1991 <5 <5 0.00 EPop6: Itans7 & StDichlorocalZulene 1978 5 1991 <5 <5 0.00 EPop6: Itans7 & StDichlorocalZulene 1978 5 1991 <5 <5 0.00 EPop6: Itans7 & StDichlorocalZulene 1978 5 1991 <5 <5 0.00 EPop6: Itans7 (chlorocalZulene 1978 5 1991 <5 0.00 EPop6: Itans7 (chlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 EPop6: Itans7 (chlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 EPop6: Itans7 (chlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 EPop6: ChlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 EPop6: ChlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 EPop6: ChlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 EPop6: ChlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 EPop6: ChlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 EPop6: ChlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 EPop6: ChlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 EPop6: ChlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 EPop6: ChlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 <5 0.00 EPop6: ChlorocalZulene 1978 5 1991 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5 0.00 <5			EP0p6: 1.1.1.2Лetrachloroethane	+307207+	22	hg/L	<5	~ 2	0.0	No Limit
EPOp6: cir7 67DichlorotzRuitene			EP0p6: trans71.67Dichloro727butene	11075p7+	22	hg/L	<5	~ 2	0.0	No Limit
EPOp6: 11.2 ZT/etrachlorochrane			EP0p6: cis71.67Dichloro727butene	16p+71175	22	hg/L	<5	^2	0.0	No Limit
EPOp6: 12.377/ichlorockrodane 9+7876 5 µg/L <5 <5 0.0 EPOp6: Entablicockrodane 9+7876 5 µg/L <5 <5 0.0 EPOp6: Entablicockrodane 9+7878 5 µg/L <5 <5 0.0 EPOp6: Entablicockrodane 9+7878 5 µg/L <5 <5 0.0 EPOp6: Entablicockrodane 947878 5 µg/L <5 <5 0.0 EPOp6: Chloromethane 957878 50 µg/L <50 <50 0.0 EPOp6: Chloromethane 957878 5 µg/L <50 <50 0.0 EPOp6: Chlorothen@ne 10+7637 5 µg/L <50 <50 0.0 EPOp6: Chlorothen@ne 957878 5 µg/L <50 <50 0.0 EPOp6: Chlorothen@ne 957878 5 µg/L <50 <50 0.0 EPOp6: L237fichlorothen@ne 957878 5 µg/L <50 <50 0.0 EPOp6: L237fichlorothen@ne 957878 5 µg/L <50 <50 0.0 EPOp6: L237fichlorothen@ne 957878 5 µg/L <50 <50 0.0 EPOp6: Chlorothenmene 957878 5 µg/L <50 <50 0.0 EPOp6: Elopichoromethane 95			EP0p6: 1.1.2.2Лetrachloroethane	p973675	22	hg/L	<5	^2	0.0	No Limit
EPOp6: Pentachlorochtane			EP0p6: 1.2.37Trichloro4ro4ane	9+71876	22	hg/L	<5	^2	0.0	No Limit
EPOp6: 127Disromo73 thiorotodaene 89.728 5 19g1.			EP0p6: Pentachloroethane	p+7017p	22	hg/L	<5	<5	0.0	No Limit
EPope: Hexachlorobutadiene 8p74873 5 µg/L <5 0.0 EPOpe: Chloromethane p5Ap178 50 µg/L <50			EP0p6: 1.2Дibromoß&hloro4ro4ane	9+71278	22	hg/L	<5	<5	0.0	No Limit
EPopis: Dichlorcodiffucomethane P57p178 50 µg/L <50 <50 0.0 EPopis: Chloromethane P57p178 50 µg/L <50 <50 0.0 EPopis: Chloromethane P57p27 50 µg/L <50 <50 0.0 EPopis: Chloromethane P57p27 50 µg/L <50 <50 0.0 EPopis: Chloromethane P57p27 50 µg/L <50 <50 0.0 EPopis: Trichloroflucomethane P57p27 50 µg/L <50 <50 0.0 EPopis: Chloromethane P57p27 50 µg/L <50 <50 0.0 EPopis: Chloromethane P57p27 50 µg/L <50 <50 0.0 EPopis: Chloroder@ne P57p27 50 µg/L <50 <50 0.0 EPopis: L27Dichlorober@ne P57p27 50 µg/L <50 <50 0.0 EPopis: Dichlorochermenhane P57p27 50 Pg/L <50 <50 0.0 EPopis: Dichlorochermenhane P57p27 50 Pg/L <50 <50 0.0 EPopis: Dichlorochermenhane P57p27 50 Pg/L <50 0.0 EPopis: Dichlorochermenhane P57p27 50 Pg/L <50 0.0 EPopis: Bonnoichi eromenhane P57p27 50 Pg/L <50 0.0 EPopis: Bonnoichi ero			EP0p6: Hexachlorobutadiene	8p7+873	2	hg/L	<5	<5	0.0	No Limit
EPOp6: Chloromethane P678p73 50 µg/L <50 <50 0.0 0.0 EPOp6: Whyl chloride P678p73 50 µg/L <50 <50 0.0 0.0 EPOp6: Chloromethane P678p73 50 µg/L <50 <50 0.0 0.0 EPOp6: Chloromethane P678p73 50 µg/L <50 <50 0.0 0.0 EPOp6: Chloromethane P678p73 50 µg/L <50 <50 0.0 0.0 EPOp6: Chlorothane@ne P678p73 50 µg/L <50 <50 0.0 0.0 EPOp6: Chlorothane@ne P678p73 5 µg/L <50 <50 0.0 0.0 EPOp6: Chlorothane@ne P678p73 5 µg/L <5 <5 0.0 0.0 EPOp6: Chlorothane@ne P678p73 5 µg/L <5 <5 0.0 0.0 EPOp6: Chlorothane@ne P678p73 5 µg/L <5 <5 0.0 0.0 EPOp6: La Tarichlorothane@ne P678p73 5 µg/L <5 <5 0.0 0.0 EPOp6: La Tarichlorothane@ne P678p73 5 µg/L <5 <5 0.0 0.0 EPOp6: La Tarichlorothane@ne P678p73 5 µg/L <5 <5 0.0 0.0 EPOp6: Chlorothane@ne P678p73 5 µg/L <5 0.0 0.0 EPOp6: Chlorothanemehane P678p73 5 µg/L <5 0.0 0.0 0.0 EPOp6: Chlorothanemehane P678p73 5 µg/L <5 0.0 0.0 0.0 EPOp6: Chlorothanemehane P678p73 5 µg/L <5 0.0 0.0 0.0 0.0 0.0 EPOp6: Chlorothanemehane P678p73 5 µg/L <5 0.0 0			EP0p6: Dichlorodifluoromethane	p57p178	20	hg/L	<50	<50	0.0	No Limit
EPOp6: Vinyl chloride			EP0p6: Chloromethane	p678p73	20	hg/L	<50	<50	0.0	No Limit
EPOp6: Bromomethane P678378 50 µg/L <50 <50 0.0 0.0 EPOp6: Chlorocethane P57073 50 µg/L <50 <50 0.0 0.0 EPOp6: Trichlorothane P57978 50 µg/L <50 <50 0.0 0.0 EPOp6: Trichlorothane P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: STrichloroben@ne P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Trichlorothane P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Trichlorothane P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Trichloroben@ne P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Trichloroben@ne P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Trichloroben@ne P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Trichloroben@ne P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Trichloroben@ne P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Trichloroben@ne P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Trichloroben@ne P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Trichloroben@ne P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Trichloroben@ne P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Bromocloharomethane P578978 5 µg/L <5 <5 0.0 0.0 EPOp6: Bromocloharomethane P578978 5 µg/L <5 0.0 0.0 EPOP6: Bromocloharometh			EP0p6: Vinyl chloride	p570176	20	hg/L	<50	<50	0.0	No Limit
EPop6: Chlorocethane p57073 50 µg/L <50 <50 0.0 0.0 EPop6: Trichlorofluoromethane p57978 50 µg/L <50 <50 0.0 0.0 EPop6: Chlorocem@ne 1087877 5 µg/L <50 <50 0.0 0.0 EPop6: Stondocluene 1087877 5 µg/L <5 <5 0.0 0.0 EPop6: Trichloroben@ne 1047877 5 µg/L <5 <5 0.0 0.0 EPop6: Trichloroben@ne 1047877 5 µg/L <5 <5 0.0 0.0 EPop6: Trichloroben@ne 1047877 5 µg/L <5 <5 0.0 0.0 EPop6: Trichloroben@ne 1047877 5 µg/L <5 <5 0.0 0.0 EPop6: Trichloroben@ne 1047877 5 µg/L <5 <5 0.0 0.0 EPop6: Trichloroben@ne 1047877 5 µg/L <5 <5 0.0 0.0 EPop6: Trichloroben@ne 1047877 5 µg/L <5 <5 0.0 0.0 EPop6: Trichloroben@ne 1047877 5 µg/L <5 <5 0.0 0.0 EPop6: Chloroform +p7478 5 µg/L <5 <5 0.0 0.0 EPop6: Bromodichloromethane 12678871 5 µg/L <5 <5 0.0 0.0 EPop6: Bromodichloromethane 12678871 5 µg/L <5 <5 0.0 0.0 EPop6: Diplomodorum +p7478 5 µg/L <5 <5 0.0 0.0 EPop6: Bromodichloromethane 12678871 5 µg/L <5 0.0 0.0 0.0 EPop6: Diplomodorum +p7478 5 µg/L <5 0.0 0.0 0.0 EPop6: Diplomodorum +p7478 5 µg/L <5 0.0 0.0 0.0 0.0 EPop6: Diplomodorum +p7478 5 µg/L <5 0.0 0.0 0.0 0.0 0.0 0.0 EPop6: Diplomodorum +p7478 5 µg/L <5 0.0			EP0p6: Bromomethane	p678379	20	µg/L	<50	<50	0.0	No Limit
EPOp6: Trichlorothucromethane p574976 50 µg/L <50 <50 0.0 EPOp6: Chloroben@ne 1087807h 5 µg/L <56 <50 0.0 EPOp6: Chloroben@ne 108787h 5 µg/L <56 <50 0.0 EPOp6: Chloroben@ne 5617677h 5 µg/L <56 <56 0.0 EPOp6: Trichloroben@ne 561767h 5 µg/L <56 <56 0.0 EPOp6: Trichloroben@ne 561767h 5 µg/L <56 <56 0.0 EPOp6: Trichloroben@ne 561767h 5 µg/L <56 <56 0.0 EPOp6: Chloroform +p7+73 5 µg/L <56 <56 0.0 EPOp6: Chloroform +p7+73 5 µg/L <56 <56 0.0 EPOp6: Bromodichloromethane 561767h 5 µg/L <56 <56 0.0 EPOp6: Dibromochloromethane 561767h 5 µg/L <56 <56 0.0 EPOp6: Dibromochloromethane 561867h 5 µg/L <56 0.0 0.0 EPOp6: Dibromochloromethane 561867h 5 µg/L <56			EP0p6: Chloroethane	p570073	20	hg/L	<50	<50	0.0	No Limit
EPOp6: Chloroben@ne			EP0p6: Trichlorofluoromethane	p57+976	20	hg/L	<50	<50	0.0	No Limit
EPOp6: Chloroben@ne 108/B07P 5 µg/L <5 65 0.0	074F: Halogenat	ed Aromatic Compounds ((QC Lot: 1776895)							
CPOp6: Bromoben@ne 108/8+7l 5 µg/L <5 <5 0.0 EPOp6: 27Chlorotoluene 95/89/8 5 µg/L <5	//11065597001	GWp	EP0p6: Chloroben@ne	4087907p	2	hg/L	<5	<5	0.0	No Limit
EPOp6: 27Chlorotoluene 95.6978 5 µg/L <5 0.0 0.0 EPOp6: 67Chlorotoluene 10+78.37 5 µg/L <5			EP0p6: Bromoben@ne	10878+71	2	hg/L	<5	<5	0.0	No Limit
QCC Lot: 1776995 EPOp6: G7Chlorotoluene 10+7637B 5 µg/L <5 60 0.0			EP0p6: 27Chlorotoluene	9576978	2	µg/L	<5	<5	0.0	No Limit
CPOP6: 1.37Dichloroben@ne 5617637 5 µg/L <5 <5 0.0 0.0 EPOp6: 1.67Dichloroben@ne 10+78+7p 5 µg/L <5			EP0p6: 67Chlorotoluene	10+76376	22	µg/L	<5	<5	0.0	No Limit
C.C. Lot: 1776895) EPOp6: 1.67Dichloroben@ne 10+78+7p 5 µg/L <5 <5 0.0 0.0 EPOp6: 1.2.3/Trichloroben@ne 12078271 5 µg/L <5			EP0p6: 1.37Dichloroben@ne	56176371	2	µg/L	<5	^ 2	0.0	No Limit
C.C. Lot: 1776895) EPOp6: 1.2.3/Trichloroben@ne 957607l 5 µg/L <5 5 0.0			EP0p6: 1.67Dichloroben@ne	10+76+7p	2	µg/L	<5	<5	0.0	No Limit
CQC Lot: 1776895) EPOp6: 1.2.37Trichloroben@ne 12078271 5 µg/L <5 5 0.0 0.0 0.0 CQC Lot: 1776895) EPOp6: Chloroform +p7+73 5 µg/L <5			EP0p6: 1.27Dichloroben@ne	9575071	2	µg/L	<5	<5	0.0	No Limit
QC Lot: 1776895) EPOp6: L2:37Trichloroben@ne 8p7+17+ 5 µg/L <5 <5 0.0 EPOp6: Chloroform EPOp6: Bromodichloromethane p5Zp76 5 µg/L <5			EP0p6: 1.2.6 Trichloroben@ne	12078271	2	µg/L	<5	<5	0.0	No Limit
(QC Lot: 1776895) EPOp6: Chloroform +p7++73 5 µg/L <5 <5 0.0 EPOp6: Bromodichloromethane 12678871 5 µg/L <5			EP0p6: 1.2.3 Trichloroben@ne	8p7+17+	2	µg/L	<5	<5	0.0	No Limit
EPOp6: Chloroform +p74+73 5 µg/L <5 <5 0.0 EPOp6: Bromodichloromethane 12678871 5 µg/L <5	P074G: Trihalome									
oromethane p572p78 5 µg/L <5 <5 0.0 oromethane 1267871 5 µg/L <5	M11065597001	GWp	EP0p6: Chloroform	£7++7d+	2	hg/L	<5	<5	0.0	No Limit
oromethane 12678871 5 µg/L <5 <5 0.0 p572572 5 µg/L <5			EP0p6: Bromodichloromethane	p572p76	2	µg/L	<5	<5	0.0	No Limit
p572572 5 µg/L <5 <5 0.0			EP0p6: Dibromochloromethane	12676871	2	µg/L	<5	<5	0.0	No Limit
			EP0p6: Bromoform	p572572	22	hg/L	<5	<5	0.0	No Limit



: p of 16 : EM1106559 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS

Page Work Order

Proect Client

Sub Matrix: WATER						Laboratory L	Laboratory Duplicate (DUP) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	RPD (%) Recovery Limits (%)	
EP080/071: Total Pe	EP080/071: Total Petroleum Hydrocarbons(QC Lot: 1776896)- continued	Lot: 1776896) - continued								
EM11065597001	GWp	EP080: C+ 7C9 Fraction	11111	20	hg/L	<20	<20	0.0	No Limit	
EP080/071: Total Re	ecoverable Hydrocarbons - N	EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 1776896)								
EM11065597001	GWp	EP080: C+ 7C10 Fraction	шш	20	hg/L	<20	<20	0.0	No Limit	
EP080: BTEXN (QC Lot: 1776896)	: Lot: 1776896)									
EM11065597001	GWp	EP080: Ben@ne	p176372	-	hg/L	₹	<u>^</u>	0.0	No Limit	
		EP080: Toluene	10878873	2	hg/L	<2	4	0.0	No Limit	
		EP080: Ethylben@ne	10076176	2	hg/L	<2	<2 <2	0.0	No Limit	
		EP080: meta7& 4ara7Xylene	10873873	2	hg/L	<2	<2	0.0	No Limit	
			10+76273							
		EP080: ortho7Xylene	9576p7+	2	hg/L	<2	<2	0.0	No Limit	
		EP080: Na4hthalene	9172073	2	ng/L	<5	<5	0.0	No Limit	



: 8 of 16 : EM1106559 Work Order Proect Client

ENVIRONMENTAL EARTH SCIENCES 2100p6 ALBERT PARK GASWORKS

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

4arameter is to monitor 4otential laboratory contramination. The quality control term Laboratory Control Sam4le (LCS) refers to a certified reference material, or a knoz n interference free matrix s4iked z ith target The quality control term Method / Laboratory Blank refers to an analyte free matrix to 2 hich all reagents are added in the same volumes or 4ro4ortions as used in standard sam4le 4re4aration. The 4ur4ose of this QC analytes. The 4ur4ose of this QC 4arameter is to monitor method 4recision and accuracy inde4endent of sam4le matrix. Dynamic Recovery Limits are based on statistical evaluation of 4rocessed LCS.

Laboratory Control Spike (LCS) Report Method Blank (MB) Sub7Matrix: WATER

				керог	Spike	Spike Recovery (%)	Recovery Limits (%)	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	Low	High
EA015: Total Dissolved Solids (QCLot: 1773871)								
EA015H: Total Dissolved Solids j 180°C	GIS72107010	5	mg/L	<5	2000 mg/L	101	98	106
ED037P: Alkalinity by PC Titrator (QCLot: 1773304)								
ED03p7P: Total Alkalinity as CaCO3	<i>IIII</i>	1	mg/L	11111	200 mg/L	92.5	dd	12p
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 1774116)	:: 1774116)							
ED061G: Sulfate as SO6 7Turbidimetric	168087978	1	mg/L	<1	12.5 mg/L	+.d6	81	125
ED045G: Chloride Discrete analyser (QCLot: 1774138)								
ED065G: Chloride	1+88p7007+	1	mg/L	-<1	1000 mg/L	111	89	11p
ED093F: Dissolved Major Cations (QCLot: 1774140)								
ED093F: Calcium	2704/099d	_	mg/L	7	5 mg/L	116	81	129
ED093F: Magnesium	p63979576	~	mg/L	₹	5 mg/L	10p	80	120
ED093F: Sodium	p66072375	1	mg/L	۲>	50 mg/L	105	p8	126
ED093F: Potassium	p6607097p	1	mg/L	\	50 mg/L	119	6d	121
EG020F: Dissolved Metals by ICP-MS (QCLot: 1776768)								
EG020A形: Aluminium	p62979075	0.01	mg/L	<0.01	0.5 mg/L	102	80	120
EG020A形: Arsenic	p66073872	0.001	mg/L	<0.001	0.1 mg/L	93.+	8p	109
EG020A形: Cadmium	p66076379	0.0001	mg/L	<0.0001	0.1 mg/L	96.3	88	110
EG020A形: Cobalt	p66076876	0.001	mg/L	<0.001	0.1 mg/L	92.5	8p	111
EG020A形: Co44er	p66075078	0.001	mg/L	<0.001	0.1 mg/L	9.06	8+	108
EG020A开: Lead	p63979271	0.001	mg/L	<0.001	0.1 mg/L	100	06	110
EG020AÆ: Manganese	p63979+75	0.001	mg/L	<0.001	0.1 mg/L	93.1	8p	111
EG020A形: Nickel	p66070270	0.001	mg/L	<0.001	0.1 mg/L	92.2	8+	112
EG020A形: Selenium	pp8276972	0.01	mg/L	<0.01	0.1 mg/L	95.2	83	111
EG020A形: Zinc	p6607++7+	0.005	mg/L	<0.005	0.1 mg/L	95.+	8+	120
EG020A形: Boron	p66076278	0.05	mg/L	<0.05	0.1 mg/L	106	+1	133
EG020A形: Iron	p6397897+	0.05	mg/L	<0.05	0.5 mg/L	95.2	6d	119
EG035F: Dissolved Mercury by FIMS (QCLot: 1776767)								
EG035F: Mercury	p63979p7+	0.0001	mg/L	<0.0001	0.0100 mg/L	+.06	p1	125
EG050F: Dissolved Hexavalent Chromium (QCLot: 1778417)	117)							
EG050F: Hexavalent Chromium	1856072979	0.01	mg/L	<0.01	0.5 mg/L	102	80	120
EK025G: Free cyanide by Discrete Analyser (QCLot: 1776352)	6352)							
EK025G: Free Cyanide		900.0	mg/L	<0.006	0.5 mg/L	9.6d	p3	111
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1776357)								
EK02+G: Total Cyanide	5p71275	900.0	mg/L	>0.006	0.2 mg/L	111	85	125



Page : 9 of 16
Work Order : EM1106559
Client : ENVIRONMENTAL EARTH SCIENCES
Pro-ect : 2100p6 ALBERT PARK GASWORKS

Sub Matrix: WATER				Method Blank (MB)		Laboratory Control Spike (LCS) Report	SS) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SOT	TOW	High
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser (QCLot: 1774001)	alyser (QCLot: 177	74001)						
EK028G: Weak Acid Dissociable Cyanide	Ш	900.0	mg/L	<0.006	0.5 mg/L	p9.8	9+	106
EK040P: Fluoride by PC Titrator (QCLot: 1773302)								
EK060P: Fluoride	1+98676878	0.1	mg/L	<0.1	5 mg/L	+'66	8d	120
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1774137)	137)							
EK05pG: Nitrite as N		0.01	mg/L	<0.01	0.5 mg/L	89.9	98	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1774233)	yser (QCLot: 1774	4233)						
EK059G: Nitrite wNitrate as N	ттт	0.01	mg/L	<0.01	0.5 mg/L	9+.2	p3	12p
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 1774141)	(QCLot: 1774141)							
EK0p1G: Reactive Phos4horus as P		0.01	mg/L	<0.01	0.5 mg/L	92.6	98	108
EK085M: Sulfide as S2- (QCLot: 1773968)								
EK085: Sulfide as S27	1869+72578	0.10	mg/L	<0.1	0.5 mg/L	95.0	82	11+
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1776895)	76895)							
EP0p6: Styrene	10076275	2	hg/L	<5	20 µg/L	105	9d	122
EP0p6: Iso4ro4ylben@ne	9878278	5	hg/L	<5	20 µg/L	105	80	120
EP0p6: n7Pro4ylben@ne	1037+571	5	hg/L	<5	20 µg/L	91.2	0d	120
EP0p6: 1.3.57Trimethylben@ne	10874p78	5	hg/L	<5	20 µg/L	93.3	p1	119
EP0p6: secrButylben@ne	13579878	5	hg/L	<5	20 µg/L	92.6	p2	120
EP0p6: 1.2.67Trimethylben@ne	957+37+	2	hg/L	~ 22	20 µg/L	96.p	p3	119
EP0p6: tert/Butylben@ne	9870+7+	2	hg/L	<5	20 µg/L	96.3	p3	119
EP0p6: 47so4ro4yltoluene	9978p7+	5	hg/L	<5	20 µg/L	95.1	p1	121
EP0p6: nÆutylben@ne	10675178	5	hg/L	<5	20 µg/L	6+.3	+2	121
EP074B: Oxygenated Compounds (QCLot: 1776895)								
EP0p6: Vinyl Acetate	10870576	20	hg/L	<50	200 µg/L	+ 66	5р	131
EP0p6: 27Butanone (MEK)	p879373	50	hg/L	<50	200 µg/L	111	6+	135
EP0p6: 67Methyl724entanone (MIBK)	10871071	50	hg/L	<50	200 µg/L	111	8+	13+
EP0p6: 27Hexanone (MBK)	5917p87+	20	hg/L	<50	200 µg/L	111	8+	138
EP074C: Sulfonated Compounds (QCLot: 1776895)								
EP0p6: Carbon disulfide	p571570	2	hg/L	<5	20 µg/L	9.06	d +	12p
EP074D: Fumigants (QCLot: 1776895)								
EP0p6: 2.2 Dichloro4ro4ane	5967207p	2	hg/L	~ 2	20 µg/L	9+.1	59	128
EP0p6: 1.27Dichloro4ro4ane	p878p75	2	hg/L	<5	20 µg/L	100	dd	121
EP0p6: cis71.37Dichloro4ro4ylene	100+170175	2	hg/L	<5	20 µg/L	100	0d	118
EP0p6: trans71.37Dichloro4ro4ylene	100+17027+	2	hg/L	~ 2	20 µg/L	92.8	+	120
EP0p6: 1.27Dibromoethane (EDB)	10+79376	2	hg/L	<5	20 µg/L	10+	p8	126
EP074E: Halogenated Aliphatic Compounds (QCLot: 1776895)	6895)							
EP0p6: Dichlorodifluoromethane	p57b178	50	hg/L	<50	200 µg/L	82.0	58	168
EP0p6: Chloromethane	p678p73	50	hg/L	<50	200 µg/L	8+.0	+5	162



Page Work Order Client Proect

: 10 of 16 : EM1106559 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS

Sub7Matrix: WATER				Method Blank (MB)		Laboratory Control Spike (LCS) Report	CS) Report	
				Report	Spike	Spike Recovery (%)	Recovery Limits (%)	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SOT	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 1776895)	1776895) - continued							
EP0p6: Vinyl chloride	p570176	20	µg/L	<50	200 µg/L	p8.2	+	161
EP0p6: Bromomethane	p678379	20	µg/L	<50	200 µg/L	81.8	5p	131
EP0p6: Chloroethane	p570073	20	µg/L	<50	200 µg/L	99.p	9+	138
EP0p6: Trichlorofluoromethane	p57+976	20	µg/L	<50	200 µg/L	0+6	d +	131
EP0p6: 1.17Dichloroethene	p573576	2	µg/L	<5	20 µg/L	9+.2	p1	125
EP0p6: lodomethane	p678876	5	µg/L	<5	20 µg/L	0+6	+	135
EP0p6: trans71.27Dichloroethene	15+7+075	2	hg/L	<5	20 µg/L	98.8	p5	121
EP0p6: 1.17Dichloroethane	p573673	2	hg/L	<5	20 µg/L	101	dd	121
EP0p6: cis71.27Dichloroethene	15+75972	2	hg/L	<5	20 µg/L	100	8d	122
EP0p6: 1.1.17Trichloroethane	p17557+	2	hg/L	<5	20 µg/L	95.1	0d	120
EP0p6: 1.17Dichloro4ro4ylene	5+37587+	2	hg/L	<5	20 µg/L	99.1	9d	122
EP0p6: Carbon Tetrachloride	5+72375	2	hg/L	<5	20 µg/L	8+.2	2b	123
EP0p6: 1.27Dichloroethane	10p70+72	2	hg/L	<5	20 µg/L	9.66	p5	125
EP0p6: Trichloroethene	p97017+	2	hg/L	<5	20 µg/L	101	dd	121
EP0p6: Dibromomethane	p679573	2	hg/L	<5	20 µg/L	102	†d	122
EP0p6: 1.1.27Trichloroethane	570075	2	hg/L	<5	20 µg/L	112	8d	12+
EP0p6: 1.37Dichloro4ro4ane	16272879	2	hg/L	<5	20 µg/L	109	6d	125
EP0p6: Tetrachloroethene	12p71876	2	µg/L	<5	20 µg/L	10+	†d	122
EP0p6: 1.1.27Tetrachloroethane	+307207+	5	µg/L	<5	20 µg/L	+.d6	+2	119
EP0p6: trans71.67Dichloro727butene	11075p7+	5	hg/L	<5	20 µg/L	91.5	+9	12+
EP0p6: cis71.67Dichloro227butene	16p+71175	5	hg/L	<5	20 µg/L	103	56	132
EP0p6: 1.1.2.27Tetrachloroethane	p973675	2	hg/L	<5	20 µg/L	116	p5	131
EP0p6: 1.2.37Trichloro4ro4ane	9+71876	5	hg/L	<5	20 µg/L	123	b5	133
EP0p6: Pentachloroethane	p+7017p	5	hg/L	<5	20 µg/L	83.1	+9	118
EP0p6: 1.2ƊibromoƁ&hloro4ro4ane	9+71278	5	hg/L	<5	20 µg/L	10+	26	126
EP0p6: Hexachlorobutadiene	8p7+873	5	hg/L	<5	20 µg/L	89.+	20	136
EP074F: Halogenated Aromatic Compounds (QCLot: 1776895)								
EP0p6: Chloroben@ne	1087907p	5	hg/L	<5	20 µg/L	108	81	121
EP0p6: Bromoben@ne	10878+71	5	µg/L	<5	20 µg/L	8.de	p5	119
EP0p6: 27Chlorotoluene	9576978	2	µg/L	<5	20 µg/L	93.2	рз	121
EP0p6: 67Chlorotoluene	10+76376	5	hg/L	<5	20 µg/L	8.96	p2	120
EP0p6: 1.37Dichloroben@ne	56179371	2	µg/L	<5	20 µg/L	105	p3	119
EP0p6: 1.67Dichloroben@ne	10+76+70	2	hg/L	<5	20 µg/L	105	9d	120
EP0p6: 1.27Dichloroben@ne	9575071	2	hg/L	<5	20 µg/L	106	8d	118
EP0p6: 1.2.67Trichloroben@ne	12078271	2	µg/L	<5	20 µg/L	9p.2	2+	128
EP0p6: 1.2.37Trichloroben@ne	8p7+17+	5	hg/L	<5	20 µg/L	101	6+	123
EP074G: Trihalomethanes (QCLot: 1776895)								
EP0p6: Chloroform	+b7++73	2	µg/L	<5	20 µg/L	100	dd	121
EP0p6: Bromodichloromethane	p572p76	2	hg/L	<5	20 µg/L	95.2	6 +	11p
) b					-



: 11 of 16 : EM1106559 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS Page Work Order Proect Client

Sub Matrix: WATER				Method Blank (MB)		Laboratory Control Spike (LCS) Report	CS) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	Low	High
EP074G: Trihalomethanes (QCLot: 1776895) - continued								
EP0p6: Dibromochloromethane	12676871	5	hg/L	<5	20 µg/L	+.+6	29	119
EP0p6: Bromoform	p572572	2	hg/L	<5	20 µg/L	96.1	69	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1776648)	t: 1776648)							
EP0p5(SIM): Na4hthalene	9172073	1	hg/L	<1.0	5 µg/L	50.+	2p.5	126
EP0p5(SIM): Acena4hthylene	20879+78	-	hg/L	<1.0	5 µg/L	+0.3	35	129
EP0p5(SIM): Acena4hthene	8373279	-	hg/L	<1.0	5 µg/L	51.0	35	12p
EP0p5(SIM): Fluorene	8+76376	-	hg/L	<1.0	5 µg/L	55.0	3+	130
EP0p5(SIM): Phenanthrene	8570178	_	hg/L	<1.0	5 µg/L	59.8	62	132
EP0p5(SIM): Anthracene	1207127p	-	hg/L	<1.0	5 µg/L	5p.8	62	132
EP0p5(SIM): Fluoranthene	20+76670	_	hg/L	<1.0	5 µg/L	+6.0	61	161
EP0p5(SIM): Pyrene	12970070	_	hg/L	<1.0	5 µg/L	d.++	09	162
EP0p5(SIM): Ben@a)anthracene	5+7573	_	hg/L	<1.0	5 µg/L	8p.2	33	153
EP0p5(SIM): Chrysene	21870179	_	hg/L	<1.0	5 µg/L	8.++	3р	165
EP0p5(SIM): Ben@(b)fluoranthene	20579972	_	hg/L	<1.0	5 µg/L	86.8	35	151
EP0p5(SIM): Ben@(k)fluoranthene	20p70879	-	hg/L	<1.0	5 µg/L	+3.3	39	161
EP0p5(SIM): Ben@(a)4yrene	5073278	0.5	hg/L	<0.5	5 µg/L	p0.0	61	139
EP0p5(SIM): Indeno(1.2.3.cd)4yrene	19373975	_	hg/L	<1.0	5 µg/L	d.++	35	161
EP0p5(SIM): Diben@a.h)anthracene	5376073	-	hg/L	<1.0	5 µg/L	6.++	3+	162
EP0p5(SIM): Ben@(g.h.i)4erylene	19172672	-	hg/L	<1.0	5 µg/L	+8.1	10	162
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1776646)	46)							
EP0p1: C10 7C16 Fraction	11111	20	hg/L	<50	5660 µg/L	9b.6	9+	126
EP0p1: C15 7C28 Fraction	11111	100	hg/L	<100	1p826 µg/L	85.5	0d	130
EP0p1: C29 7C3+ Fraction	11111	20	hg/L	<50	3+96 µg/L	88.2	8+	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1776896)	96)							
EP080: C+ 7C9 Fraction	11111	20	hg/L	<20	320 µg/L	102	p2	13+
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 1776646)	Draft (QCLot: 1	776646)						
EP0p1: >C10 7C1+ Fraction	11111	100	hg/L	<100	10320 µg/L	p5.2	0d	130
EP0p1: >C1+ 7C36 Fraction	11111	100	hg/L	<100	1++60 µg/L	85.9	0d	130
EP0p1: >C36 7C60 Fraction	11111	100	hg/L	<100	1080 µg/L	98.1	0d	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 1776896)	Draft (QCLot: 1	776896)						
EP080: C+ 7C10 Fraction	11111	20	hg/L	<20	3p0 µg/L	102	0d	130
EP080: BTEXN (QCLot: 1776896)								
EP080: Ben@ne	p176372	_	hg/L	۲>	20 µg/L	98.5	рз	12p
EP080: Toluene	10878873	2	µg/L	<2	20 µg/L	101	9d	128
EP080: Ethylben@ne	1001111	2	hg/L	<2	20 µg/L	9b.5	p2	12+
EP080: meta7 & 4ara7Xylene	10873873	2	hg/L	<2	60 µg/L	106	6+	133
	10+76273	(=	Ç		0	(00,
EP080: ortho7Xylene	9576p7+	2	hg/L	<2	20 µg/L	98.8	9d	128



Page Work Order Client Pro-ect

: 12 of 16 : EM1106559 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS

CLot: 1776896) - continued		Method Blank (MB)		Laboratory Control Spike (LCS) Report	S) Report	
CAS Number LOR Unit		Report	Spike	Spike Recovery (%)	Recovery Limits (%)	imits (%)
T. CONTRACTOR	LOR		Concentration	SOT	Low	High
1	ned hours					
EP080: Na4nthalene	9172073 5 µg	3/L <5	5 µg/L	90.2	0d	130



: 13 of 16 : EM1106559 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS Work Order Proect Client

Matrix Spike (MS) Report

The quality control term Matrix S4ike (MS) refers to an intralaboratory s4lit sam4le s4iked z ith a re4resentative set of target analytes. The 4ur4ose of this QC 4arameter is to monitor 4otential matrix effects on analyte recoveries. Static Recovery Limits as 4er laboratory Data Quality Ob-ectives (DQOs). Ideal recovery ranges stated may be z aived in the event of sam4le matrix interference.

e (Turbi	Lot: 1774116) ED061G: Sulfate as SO6 7Turbidimetric	your Month	Spike	Spike Recovery (%)	Recovery Limits (%)	imits (%)
EQ035F: Dissolved Mercury by FIMS (QCLot: 1776767 EM11065597002 Anonymous EG020F: Dissolved Metals by ICP-MS (QCLot: 1776767 EM11065597001 GWp EM11065597001 GWp EM11065597002 GW2+ EG050F: Dissolved Hexavalent Chromium (QCLot: 1776767 EM11065597002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 177 EM11065517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 17801106517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 17801106517002 Anonymous EK026G: Mirrite as N by Discrete Analyser (QCLot: 178011061807002 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK040F: Mirrite as N by Discrete Analyser (QCLot: 1780517010)	Method: Compound Lot: 1774116) ED061G: Sulfate as SO6 7Turbidimetric	CAC Mumbor				
EM1106593705 Anonymous EM1106593705 Anonymous ED045G: Chloride Discrete analyser (QCLot: 1774138) EM1106552703 Anonymous EG020F: Dissolved Metals by ICP-MS (QCLot: 1776767) EM11065597001 GWp EM11065597002 GW2+ EG050F: Dissolved Hexavalent Chromium (QCLot: 177 EM11065517002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 178M11065517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 178M1106517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 178M1106517001 Anonymous EK026G: Weak Acid Dissociable Cyanide By Discrete Analyser (QCLot: 178M11061807002 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 177M1061807002 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 177M1061807002 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 177M1061807002 Anonymous	_ot: 1774116) ED061G: Sulfate as SO6 7Turbidimetric	CAS NUMBER	Concentration	MS	Pow	High
EM11065697005 EM11065627003 EM11065627003 Anonymous EG020F: Dissolved Metals by ICP-MS (QCLot: 1776768 EM11065597001 EM11065597001 GWp EM11065517002 GW2+ EG050F: Dissolved Hexavalent Chromium (QCLot: 1776767) EM1065517002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 1776767) EM1106517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 1776767) EM11065197001 Anonymous EK026G: Weak Acid Dissociable Cyanide By Discrete Analyser (QCLot: 1776767) EM1106597001 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM1106597001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 1776767)						
EM11065627003 Anonymous EG020F: Dissolved Metals by ICP-MS (QCLot: 1776768) EM11065697001 GWp EM11065697002 GW2+ EG050F: Dissolved Hexavalent Chromium (QCLot: 1776767) EM11065617002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 1776767) EM11065617002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: EM11065197001 Anonymous EK026G: Weak Acid Dissociable Cyanide By Discrete Analyser (QCLot: EM11065197001 Anonymous EK026G: Wasak Acid Dissociable Cyanide By Discrete Anonymous EK02070: Nitrite as N by Discrete Analyser (QCLot: 177676767) EM11061807702 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 177676767676767676767676767676767676767		168087978	10 mg/L	# Not Determined	0d	130
EM11065627003 Anonymous EG020F: Dissolved Metals by ICP-MS (QCLot: 1776768 EM11065597001 GW2+ EM1106559702 GW2+ EM11065517002 Anonymous EK026G: Total Cyanide by Discrete Analyser (QCLot: 17 EM1106517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 17 EM1106517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 17 EM1106519701 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 17 EM1106519701 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17						
EG020F: Dissolved Metals by ICP-MS (QCLot: 1776768 EM11065597001 GWp EG035F: Dissolved Mercury by FIMS (QCLot: 1776767) EM11065597002 GW2+ EG050F: Dissolved Hexavalent Chromium (QCLot: 177 EM11065517002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 17 EM11065517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: EM11065197001 Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete Analyses (QCLot: 17 EM11065197001 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17 EK057G: Nitrite Analyser	ED065G: Chloride	1+88p7007+	6000 mg/L	10+	0d	130
EG035F: Dissolved Mercury by FIMS (QCLot: 1776767) EM11065597002 GW2+ EG050F: Dissolved Hexavalent Chromium (QCLot: 177 EM11065517002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 17801106517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 178011065197001 Anonymous EK026G: Weak Acid Dissociable Cyanide By Discrete Analyser (QCLot: 178011061807002 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 1773302)	8)					
EG035F: Dissolved Mercury by FIMS (QCLot: 1776767) EM1106597002 GW2+ EG050F: Dissolved Hexavalent Chromium (QCLot: 177 EM11065517002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 178 EM1106517001 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 178 EM11065197001 Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 1773302)	EG020AÆ: Arsenic	p66073872	0.2 mg/L	93.2	88	139
EG035F: Dissolved Mercury by FIMS (QCLot: 1776767) EM11065697002 GW2+ EG050F: Dissolved Hexavalent Chromium (QCLot: 177 EM11065517002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 1 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 1 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 1 Anonymous EK026G: Weak Acid Dissociable Cyanide By Discrete Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EK057G: Nitrite as N by Discrete Analyser (QCLot: 17 Anonymous)	EG020AÆ: Cadmium	p66076379	0.05 mg/L	113	p5	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1776767) EM110659702 GW2+ EG050F: Dissolved Hexavalent Chromium (QCLot: 177 EM11065517002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 1 Anonymous) EK026G: Total Cyanide By Discrete Analyser (QCLot: EM11065197001 Anonymous) EK026G: Weak Acid Dissociable Cyanide By Discrete Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EK040P: Fluoride by PC Titrator (QCLot: 1773302) EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	EG020AÆ: Cobalt	p66076876	0.2 mg/L	116	dd	129
EG035F: Dissolved Mercury by FIMS (QCLot: 1776767) EM110659702 GW2+ EG050F: Dissolved Hexavalent Chromium (QCLot: 177 EM11065517002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 1 Anonymous) EK026G: Total Cyanide By Discrete Analyser (QCLot: EM11065197001 Anonymous) EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser (QCLot: EK028G: Weak Acid Dissociable Cyanide By Discrete Anonymous) EK040P: Fluoride by PC Titrator (QCLot: 1773302) EK057G: Nitrite as N by Discrete Analyser (QCLot: 17 Anonymous)	EG020AÆ: Co44er	p66075078	0.2 mg/L	12+	p1	12p
EG035F: Dissolved Mercury by FIMS (QCLot: 1776767) EM1106559702 GW2+ EG050F: Dissolved Hexavalent Chromium (QCLot: 177 EM1106551702 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 178 EM1106517001 Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	EG020A开: Lead	p63979271	0.2 mg/L	112	p1	123
EG035F: Dissolved Mercury by FIMS (QCLot: 1776767) EM11065597002 GW2+ EM11065517002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 17 EM11065517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 18 EM11065197001 Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser (QCLot: 19 EM11061807002 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	EG020A开: Manganese	p63979+75	0.2 mg/L	6.dd	++	132
EG035F: Dissolved Mercury by FIMS (QCLot: 1776767) EM1106559002 EG050F: Dissolved Hexavalent Chromium (QCLot: 177 EM1106551002 Anonymous EK026G: Total Cyanide by Discrete Analyser (QCLot: 17 EM1106519001 Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	EG020AÆ: Nickel	p66070270	0.2 mg/L	11+	p3	129
EG035F: Dissolved Mercury by FIMS (QCLot: 1776767) EM11065597002 GW2+ EG050F: Dissolved Hexavalent Chromium (QCLot: 177 EM11065517002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 178/106517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 18/1065197001 Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser (QCLot: 18/11061807002 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 1773302)	EG020AÆ: Zinc	p6607+7+	0.2 mg/L	119	8+	13+
EM11065597002 EG050F: Dissolved Hexavalent Chromium (QCLot: 177 EM11065517002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 1*1* EM11065517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 1*1* EM11065197001 Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete Amonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17* EM110653+7001)						
EG050F: Dissolved Hexavalent Chromium (QCLot: 177 EM11065517002 Anonymous EK025G: Free cyanide by Discrete Analyser (QCLot: 1 EM11065517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: EM11065197001 Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	EG035F: Mercury	p63979p7+	0.0100 mg/L	8p.2	0d	130
EM11065517002 EK025G: Free cyanide by Discrete Analyser (QCLot: 17 EM11065517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: 18 EM11065197001 Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete A EM11061807002 EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17 EM5502)	78417)					
EK025G: Free cyanide by Discrete Analyser (QCLot: 1' EM11065517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: PM11065197001 Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser (QCLot: PM11061807002 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	EG050F: Hexavalent Chromium	1856072979	0.5 mg/L	+:+6	0d	130
EM11065517002 Anonymous EK026G: Total Cyanide By Discrete Analyser (QCLot: EM11065197001 Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	776352)					
EK026G: Total Cyanide By Discrete Analyser (QCLot: EM11065197001 Anonymous EK028G: Weak Acid Dissociable Cyanide By Discrete A EM11061807002 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	EK025G: Free Cyanide	Ш.	0.5 mg/L	99.p	0d	130
EM11065197001 EK028G: Weak Acid Dissociable Cyanide By Discrete A EM11061807002 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	1776357)					
EK028G: Weak Acid Dissociable Cyanide By Discrete A EM11061807002 Anonymous EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	EK02+G: Total Cyanide	5p71275	0.2 mg/L	112	0d	130
EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	Analyser (QCLot: 1774001)					
EK040P: Fluoride by PC Titrator (QCLot: 1773302) EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	EK028G: Weak Acid Dissociable Cyanide	1111	0.5 mg/L	95.5	0d	130
EM110653+7001 Anonymous EK057G: Nitrite as N by Discrete Analyser (QCLot: 17)						
EK057G: Nitrite as N by Discrete Analyser (QCLot: 17	EK060P: Fluoride	1+98676878	5.0 mg/L	106	0d	130
	74137)					
EM11065627003 Anonymous	EK05pG: Nitrite as N	Ш.	0.5 mg/L	11p	0d	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1774233)	nalyser (QCLot: 1774233)					
EM1106562700p Anonymous	EK059G: Nitrite w Nitrate as N	Ш.	0.5 mg/L	98.9	0d	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 1774141)	ser (QCLot: 1774141)					
EM11065597002 GW2+	EK0p1G: Reactive Phos4horus as P	Ш.	0.5 mg/L	103	0d	130
enated /						
EM11065597002 GW2+	EP0p6: 1.17Dichloroethene	p573576	20 µg/L	0+d	56	106



: 16 of 16 : EM1106559 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS

Page Work Order

Client Proect

Sub7Matrix: WATER					Matrix Spike (MS) Report	T.	
				Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074E: Halogenate	EP074E: Halogenated Aliphatic Compounds (QCLot: 1776895) - continued	- continued					
EM11065597002	GW2+	EP0p6: Trichloroethene	p97017+	20 µg/L	88.p	+2	120
EP074F: Halogenate	EP074F: Halogenated Aromatic Compounds (QCLot: 1776895)						
EM11065597002	GW2+	EP0p6: Chloroben@ne	1087907p	20 µg/L	91.8	8+	132
EP080/071: Total Pet	EP080/071: Total Petroleum Hydrocarbons (QCLot: 1776896)						
EM11065597002	GW2+	EP080: C+7C9 Fraction	ШТ	280 µg/L	81.+	51	125
EP080/071: Total Re	EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 1776896)	(QCLot: 1776896)					
EM11065597002	GW2+	EP080: C+ 7C10 Fraction	Ш.	330 µg/L	86.0	0d	130
EP080: BTEXN (QCLot: 1776896)	Lot: 1776896)						
EM11065597002	GW2+	EP080: Ben@ne	p176372	20 µg/L	80.1	+3	131
		EP080: Toluene	10878873	20 µg/L	83.+	+5	133





Environmental Division

QUALITY CONTROL REPORT

: 1 of 16		: Environmental Division Melbourne : Carol Walsh	: 6 Westall Rd S4ringvale VIC Australia 31p1	: carol.z alshj alsenviro.com : w+17378569 9+08 : w+17378569 9+01	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement	: 037MAYZ011	: 307MAY72011	: 2 : 2
Page		Laboratory Contact	Address	E7mail Tele4hone Facsimile	QC Level	Date Sam4les Received	Issue Date	No. of sam4les received No. of sam4les analysed
: EM1104AA m	Ţ	: EI RTOI MEI HNS ENLHC 5 pTEI pE5 : MR DAVID JAMES	: P.O.BOX 2253 FOOTSCRAY VIC, AUSTRALIA 3011	: d-amesj eesi.bi@ : w+1 9+8p1+++ : w+1 03 9+8p1866	: 2100p6 ALBERT PARK GASWORKS : 7777	<i>III</i> :	. 777 777	: ME/015/11 V3
Work Order	nt eNdt eNV	Client	Address	E7mail Tele4hone Facsimile	Pro-ect Site	C707C number	Sam4ler Order number	Quote number

This redort su4ersedes any 4revious re4ort(s) zith this reference. Results a44ly to the sam4le(s) as submitted. All 4ages of this re4ort have been checked and a44roved for

This Quality Control Re4ort contains the follozing information:

- Laboratory Du4licate (DUP) Re4ort; Relative Percentage Difference (RPD) and Acce4tance Limits
- Method Blank (MB) and Laboratory Control S4ike (LCS) Re4ort; Recovery and Acce4tance Limits
- Matrix S4ike (MS) Re4ort; Recovery and Acce4tance Limits



NATA Accredited Laboratory 825

This document is issued in accordance z ith NATA accreditation requirements.

Accredited for com4liance z ith ISO/IEC 1p025.

WORLD RECOGNISED ACCREDITATION

Signatories

Electronic signing has been This document has been electronically signed by the authori@d signatories indicated beloz. carried out in com4liance z ith 4rocedures s4ecified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Eric Chau	Metals Team Leader	Melbourne Inorganics
Herman Lin	Laboratory Coordinator	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics



: ENVIRONMENTAL EARTH SCIENCES 2100p6 ALBERT PARK GASWORKS EM1106559 Amendment 1 Work Order Proect Client

: 2 of 16

General Comments

The analytical 4rocedures used by the Environmental Division have been develoded from established internationally recogni@d 4rocedures such as those 4ublished by the USEPA, APHA, AS and NEPM. In house develo4ed 4rocedures are em4loyed in the absence of documented standards or by client request.

Where moisture determination has been 4erformed, results are re4orted on a dry z eight basis.

Where a re4orted less than (<) result is higher than the LOR, this may be due to 4rimary sam4le extract/digestate dilution and/or insuffient sam4le for analysis.

Where the LOR of a redorted result differs from standard LOR, this may be due to high moisture content, insufficient sam4le (reduced z eight em4loyed) or matrix interference.

Anonymous = Refers to sam4les z hich are not s4ecifically 4art of this z ork order but formed 4art of the QC 4rocess lot Key:

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

LOR = Limit of re4orting

RPD = Relative Percentage Difference

= Indicates failed QC





: 3 of 16 : EM1106559 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS

Work Order

Proect Client

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Du4licate refers to a randomly selected intralaboratory s4lit. Laboratory du4licates 4rovide information regarding method 4recision and sam4le heterogeneity. The 4ermitted ranges for the Relative Percent Deviation (RPD) of Laboratory Du4licates are s4ecified in ALS Method QWI = LOR:7 No Limit; Result betz een 10 and 20 times LOR:70% 750%; Result > 20 times LOR:70% 720%.

TTT	SubMatrix: Wn HEL						Laboratory L	Laboratory Duplicate (DUP) Report		
## Value ## Value ## H Value ## Total Dissolved Solids j 180°C ## Total Akalinity as CaCO3 ## Potassium ## Potasulity ## Potassium ## Potasulity ##	Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
: 4H Value TITT : 4H Value TITT : 4H Value TITT : 4H Value TITT H: Total Dissolved Solids j 180°C GIS:Z107010 H: Total Dissolved Solids j 180°C GIS:Z107010 H: Total Dissolved Solids j 180°C GIS:Z107010 H: Total Dissolved Solids j 180°C GIS:Z107011 TP: Hydroxide Alkalinity as CaCO3 DMO:Z107011 TP: Bicarbonate Alkalinity as CaCO3 DMO:Z107011 TP: Hydroxide Alkalinity as CaCO3 DMO:Z107001 TP: Potas Incarbonate Alkalinity as CaCO3 TITT TP: Bicarbonate Alkalinity as CaCO3 TITT Alt: Bicarbonate Alkalinity as CaCO3 TITT OV 188411-a G: Sulfate as SO6 7Turbidimetric G: Sulfate as SO6 7Turbidimetric 1680879978 G: Chloride 1+88p7007* G: Chloride 1+88p7007* F: Calcium p6607978 <th>En 00A: (C Q p So</th> <th>/ 18841) 4a</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	En 00A: (C Q p So	/ 18841) 4a								
## Total Dissolved Solids j 180°C GISZ107010 ##: Total Dissolved Solids j 180°C GISZ107011 ##: Total Dissolved Solids j 180°C GISZ107011 ##: Total Alkalinity as CaCO3 381273274 ##: Total Alkalinity as CaCO3 381273274 ##: Total Alkalinity as CaCO3 DMO72107001 ##: Solidim Dissolved Alkalinity as CaCO3 DEGO TOTAL DEGO TO	EM11065517001	Anonymous	EA005: 4H Value	<i>IIII</i>	0.01	4H Unit	06.+	06.+	0.0	0% 720%
H: Total Dissolved Solids j 180°C H: Total Alkalinity as CaCO3 H: Experimentate Alkalinity as CaCO3 H: Experimentate Alkalinity as CaCO3 H: Total Alkalinity as CaCO3 H: Total Alkalinity as CaCO3 H: Experimentate Alkalinity as CaCO3 H: Experimentate Alkalinity as CaCO3 H: Experimentate Alkalinity as CaCO3 H: Fotal Alkalinity as CaCO3 H: Solution H: Reprossion H: Repr	EM11065p1700+	Anonymous	EA005: 4H Value	<i>IIII</i>	0.01	4H Unit	p.1+	p.18	0.3	0% 720%
H: Total Dissolved Solids j 180°C H: Potal Dissolved Solids j 180°C H: Potal Alkalinity as CaCO3 H: Bicarbonate Alkalinity as CaCO3 H: Bicarbo	En 01A: HoV Di svvo	Bed 5 o Bedv C7 p So V 1883 P								
H: Total Dissolved Solids j 180°C H: Export the secons of the s	EM11065597001	GWp		GIS72107010	2	mg/L	1+60	1++0	1.6	0% 720%
(2) Chloride (2) Culoride (3) Carbonate Alkalinity as CaCO3 381273274 (7) P. Hydroxide Alkalinity as CaCO3 381273274 (7) P. Eicarbonate Alkalinity as CaCO3 381273274 (7) P. Hydroxide Alkalinity as CaCO3 381273274 (7) P. Hydroxide Alkalinity as CaCO3 381273274 (7) P. Eicarbonate Alkalinity as CaCO3 381273274 (7) P. Eicarbonate Alkalinity as CaCO3 77 P. Total Alkalinity as CaCO3 77 P. Eicarbonate Alkalinity as CaCO3 P. Eicarbonate Alkalinity as CaCO3 P. Eicarbonate Alkalinity as Ca	EM11065927002	Anonymous		GIS72107010	5	mg/L	000+	5890	1.9	0% 720%
	Ei 038y: n Dkl DNSLD		33304a							
7.P. Carbonate Alkalinity as CaCO3 7.P. Elicarbonate Alkalinity as CaCO3 7.P. Elicarbonate Alkalinity as CaCO3 7.P. Total Al	EM11065607008	Anonymous	ED03p7P: Hydroxide Alkalinity as CaCO3	DMO72107001	-	mg/L	٧	٧	0.0	No Limit
7.7: Bicarbonate Akalinity as CaCO3			ED03p7P: Carbonate Alkalinity as CaCO3	381273274	-	mg/L	۲	۲	0.0	No Limit
7.77: Total Alkalinity as CaCO3 7.77: Hydroxide Alkalinity as CaCO3 7.77: Hydroxide Alkalinity as CaCO3 7.77: Carbonate Alkalinity as CaCO3 7.77: Sicarbonate Alkalinity as CaCO3 7.77: Sicarbonate Alkalinity as CaCO3 7.77: Total Alkalinity as CaCO3 7.77: Carbonate as SO6 7Turbidimetric 168087p978 7.77: Calcium p6607p07 7.78: Magnesium p6607p07 7.77: Calcium p6607p07 7.77: Calc			ED03p7P: Bicarbonate Alkalinity as CaCO3	p175273	-	mg/L	38p	388	0.0	0% 720%
™P: Hydroxide Alkalinity as CaCO3 DMOZ 107001 №: Carbonate Alkalinity as CaCO3 38127327+ №: Bicarbonate Alkalinity as CaCO3 p175273 №: Total Alkalinity as CaCO3 mm №: Sulfate as SO6 7T urbidimetric 168087ρ978 G: Sulfate as SO6 7T urbidimetric 1488ρ7007+ G: Chloride 1+88ρ7007+ F: Calcium p66076072 F: Sodium p6607807 F: Calcium p6607807 F: Sodium p6607807 F: Calcium p6607807 F: Sodium p6607807 F: Sodium p6607837 AAT: Cadmium p6607837 AAT: Cadmium p6607807 AAT: Cadmium p6607807 AAT: Codalt p6607807			ED03p7P: Total Alkalinity as CaCO3	<i>IIII</i>	-	mg/L	38p	388	0.0	0% 720%
7. Carbonate Alkalinity as CaCO3 7. Elicarbonate Alkalinity as CaCO3 7. Total Alkalinity as CaCO3 7. Sulfate as SO6 7Turbidimetric 168087978 7. Sulfate as SO6 7Turbidimetric 168087978 7. Calcium p6607275 7. Magnesium p6607275 7. Magnesium p6607275 7. F. Magnesium p66072375 7. F. Sodium p6607378 7. Sodiu	EM11065617005	Anonymous	ED03p7P: Hydroxide Alkalinity as CaCO3	DMO72107001	-	mg/L	^	۲	0.0	No Limit
№ Eicarbonate Akalinity as CaCO3 p175273 № Total Alkalinity as CaCO3 TTT oV 188411-a 1680879978 G: Sulfate as SO6 7Turbidimetric 1680879978 G: Sulfate as SO6 7Turbidimetric 1488ρ70074 G: Chloride 1488ρ70074 F: Calcium p66072375 F: Sodium p66072375 F: Calcium p66072375 F: Calcium p66072375 F: Sodium p66072375 F: Sodium p66072375 F: Potassium p6607378 AAT: Cadmium p6607378 AAT: Cadmium p6607378 AAT: Codalt p66076878 AAT: Codalt p66076878			ED03p7P: Carbonate Alkalinity as CaCO3	381273274	-	mg/L	^	2	0.0	No Limit
ov 188411-a TTT ov 188411-a 1680879978 G: Sulfate as SO6 7Turbidimetric 1680879978 G: Sulfate as SO6 7Turbidimetric 1680879978 G: Chloride 1488p70074 G: Chloride 1488p70074 F: Calcium p6607p072 F: Magnesium p66072375 F: Calcium p66072375 F: Calcium p66072375 F: Sodium p66072375 F: Potassium p66072375 F: Potassium p66078378 AAT: Cadmium p66078378 AAT: Cadmium p66078378 AAT: Codalt p66078878 AAT: Codalt p66078078			ED03pか: Bicarbonate Alkalinity as CaCO3	p175273	_	mg/L	က	3	0.0	No Limit
6: Sulfate as SO6 7Turbidimetric 1680879978 6: Sulfate as SO6 7Turbidimetric 1680879978 6: Sulfate as SO6 7Turbidimetric 1488p70074 6: Chloride 1488p70074 6: Chloride 1488p70077 6: Chloride 1488p70077 6: Calcium p66070072 6: Sodium p6607097 6: Calcium p6607097 6: Sodium p6607097 6: Sodium p6607097 6: Sodium p66070378 6: Sodium p66070378 6: Sodium p66070378 7AT: Cadmium p66070378 7AT: Cadmium p66070378 7AT: Codalt p66076878			ED03p7P: Total Alkalinity as CaCO3	ШШ	_	mg/L	က	2	9.89	No Limit
G: Sulfate as SO6 7Turbidimetric 1680879978 G: Sulfate as SO6 7Turbidimetric 1680879978 G: Chloride 1+88p70074 G: Chloride 1+88p70077 G: Chloride 1+88p70074 G: Chloride 1+88p70077 G:	Ei 041G: 5ulil Ve OH	ur9sds eVscal v 504) 29bi	n Q p SoV 188411-a							
G: Sulfate as SO6 7Turbidimetric 1680879978 G: Chloride 1+88p70074 G: Chloride 1+88p70074 F: Calcium p66079072 F: Sodium p6607375 F: Sodium p66070072 F: Calcium p660707375 F: Sodium p6607077 F: Sodium p6607077 F: Sodium p6607375 F: Sodium p6607375 AAF: Cadmium p6607375 AAF: Cadmium p6607377 AAF: Cadmium p6607387 AAF: Cobalt p66076078 AAF: Cobalt p66076078	EM11065937006	Anonymous	ED061G: Sulfate as SO6 7Turbidimetric	168087978	_	mg/L	392	392	0.0	0% 720%
G: Chloride 1+88p7007+ G: Chloride 1+88p7007+ G: Chloride 1+88p7007+ F: Calcium p66076072 F: Sodium p6607375- F: Calcium p6607097- F: Calcium p6607072 F: Calcium p6607077- F: Sodium p6607077- AF: Sodium p660737- AAF: Cadmium p6607637- AAF: Cadmium p6607837- AAF: Cobalt p6607887- AAF: Cobalt p6607687-	EM11065627001	Anonymous	ED061G: Sulfate as SO6 7Turbidimetric	168087978	-	mg/L	15p	1+3	3.8	0% 720%
D65 G: Chloride 1+88p7007+ D65 G: Chloride 1+88p7007+ D93 F: Calcium p66076072 D93 F: Sodium p66072375 D93 F: Otassium p66070975 D93 F: Agnesium p66070975 D93 F: Agnesium p66070975 D93 F: Sodium p66070375 D93 F: Potassium p66070375 D20 AT: Cadmium p66070372 D20 AT: Cadmium p66076372 D20 AT: Cobalt p66076878 D20 AT: Cobalt p66076878	Ei 04AG: phDorsde i	svcreVe INIDover Of p SoV 1	188413Pa							
D65 G: Chloride 1+88p70074 993 F: Calcium p66076072 993 F: Calcium p66072375 993 F: Sodium p66072375 993 F: Calcium p66070974 993 F: Calcium p66070975 993 F: Sodium p66070976 993 F: Potassium p66070375 993 F: Potassium p66070376 - Pa p66076378 220 AT: Cadmium p66076378 220 AT: Cobalt p66076878 220 AT: Cobalt p66076878	EM11065627001	Anonymous	ED065G: Chloride	1+88p7007+	_	mg/L	2690	3020	19.2	0% 720%
993F: Calcium p66074072 993F: Magnesium p63978578 993F: Magnesium p66072375 993F: Calcium p66070974 993F: Calcium p66070977 993F: Magnesium p66072375 993F: Potassium p66072375 993F: Potassium p6607377 22047F: Cadmium p66076378 22047F: Cobalt p66076878 22047F: Cobalt p66076878	EM1106562702p	Anonymous	ED065G: Chloride	1+88p7007+	-	mg/L	1p80	1+30	8.8	0% 720%
: Calcium p66076072 : Magnesium p63978576 : Sodium p66072375 : Potassium p66070976 : Calcium p66070976 : Sodium p66070976 : Sodium p6607376 : Todamium p6607376 : Tasenic p66076378 : Tasenic p66078876 : Tasenic p66078877 : Tasenic p66078876	Ei 0m8F: i svvo Bed	Mijor pil Vao Nv QT p So V 188	84140a							
: Magnesium p63979576 : Sodium p6607375 : Potassium p6607097 : Calcium p6607072 : Magnesium p6607072 : Sodium p6607375 : Potassium p6607375 :/F: Cadmium p66076379 :/F: Arsenic p66078372 :/F: Cobalt p66078875 :/F: Cobalt p66076078	EM11065517001	Anonymous	ED093F: Calcium	Z2042099d	-	mg/L	۲>	۲۷	0.0	No Limit
: Sodium p66072375 : Potassium p6607097 : Calcium p6607007 : Sodium p66072375 : Potassium p66072375 : Potassium p6607375 :/F: Cadmium p66076379 :/F: Arsenic p66078372 :/F: Cobalt p66078875 :/F: Cobalt p66076876			ED093F: Magnesium	p63979576	_	mg/L	^	۲ ۲	0.0	No Limit
: Potassium p660797p : Calcium p6607p07Z : Magnesium p6397857b : Sodium p6607237b : Potassium p660737b x7F: Cadmium p660787c x7F: Arsenic p660787c x7F: Cobalt p660787c x7F: Cobalt p6607687c			ED093F: Sodium	p6607375	_	mg/L	1	۲	0.0	No Limit
: Calcium p66076072 : Magnesium p63978576 : Sodium p66072375 : Potassium p66072375 : T. Cadmium p6607378 : T. Cadmium p6607378 : T. Cadmium p6607378 : T. Cadmium p6607378 : T. Cadmium p66073872 : T. Cobalt			ED093F: Potassium	d/60/099d	_	mg/L	۲	۲	0.0	No Limit
: Magnesium p63979576 : Sodium p66072375 : Potassium p6607979 : Tr. Cadmium p6607872 : Tr. Cadmium p6607872 : Tr. Cobalt p6607872	EM11065+9700+	Anonymous	ED093F: Calcium	D6607p072	-	mg/L	3+0	3++	1.p	0% 720%
: Sodium p660723万			ED093F: Magnesium	p63979576	-	mg/L	1020	1030	8.0	0% 720%
: Potassium p6607097p p6607097p p6607097p p6607097p p6607037a p6607637a p6607887z p660787z p66077z p66077z p66077z p660			ED093F: Sodium	p66072375	_	mg/L	+5p0	0+d+	2.8	0% 720%
(不: Cadmium p66076379 p66078378 A T Senic p66078872 p66078872 p66078878 A T C C C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C A 4 A P C C C A 4 A P C C C A 4 A P C C C A 4 A P C C C A 4 A P C C C C C C C C C C C C C C C C C C			ED093F: Potassium	d/607099q	-	mg/L	62p	630	0.0	0% 720%
GWp EG020AF: Cadmium p66078379 EG020AF: Arsenic p66078872 EG020AF: Cobalt p66078876	EG0) 0F: i svvo Bed	MeV Dy 9b Tpy 2M5 Ctp So V	/188-8-Pa							
p66073872 p66078876	EM11065597001	GWp	EG020A形: Cadmium	p66076379	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
p66078876			EG020AÆ: Arsenic	p66073872	0.001	mg/L	0.086	0.085	0.0	0% 720%
8202030			EG020AÆ: Cobalt	p66076876	0.001	mg/L	<0.001	<0.001	0.0	No Limit
			EG020AF: Co44er	p66075078	0.001	mg/L	<0.001	<0.001	0.0	No Limit



Page : 6 of 16

Work Order : EM1106559 Amendment 1

Client : ENVIRONMENTAL EARTH SCIENCES

Pro-ect : 2100p6 ALBERT PARK GASWORKS

Sub™atrix: WnHEL						Laboratory D	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG0) 0F: i svoßed MeV B 9b py 2M5		Q p SoV 188-8-Pa 2coN&Nued							
EM11065597001	GWp	EG020AÆ: Lead	p63979271	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A开: Manganese	p63979+75	0.001	mg/L	0.138	0.160	1.6	0% 720%
		EG020A开: Nickel	p66070270	0.001	mg/L	0.00p	0.00p	0.0	No Limit
		EG020A形: Zinc	p6607+74	0.005	mg/L	0.02+	0.01p	0.09	No Limit
		EG020A开: Aluminium	p62979075	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A开: Selenium	pp8276972	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A开: Boron	p66076278	0.05	mg/L	0.86	0.82	3.6	%057 %0
		EG020AÆ: Iron	p63978974	0.05	mg/L	0.12	0.11	12.3	No Limit
EM11065pp7001	Anonymous	EG020A7F: Cadmium	p66076379	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020AÆ: Arsenic	p66073872	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020AÆ: Cobalt	p66076876	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020AF: Co44er	p66075078	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020AÆ: Lead	p63979271	0.001	mg/L	0.001	<0.001	0.0	No Limit
		EG020AÆ: Manganese	p63979+75	0.001	mg/L	0.015	0.009	69.2	No Limit
		EG020A开: Nickel	p66070270	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A开: Zinc	p6607+7+	0.005	mg/L	0.02+	<0.005	13+	No Limit
		EG020A开: Aluminium	p62979075	0.01	mg/L	0.31	0.36	8.1	0% 720%
		EG020A开: Selenium	pp8276972	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020AÆ: Boron	p66076278	0.05	mg/L	<0.05	<0.05	0.0	No Limit
		EG020A形: Iron	p63978974	0.05	mg/L	0.29	0.25	13.3	No Limit
EG03AF: i svvolbed Mercurb 9b FTM5	Qp	SoV 188- 8- 8a							
EM11065597001	GWp	EG035F: Mercury	p63979p7+	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EM11065987008	Anonymous	EG035F: Mercury	p63979p7+	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG0A0F: i svvolised	EG0A0F:isvo God Cexi6IDeNVphrotsut Ofp	Q p SoV 188P418a							
EM11065517001	Anonymous	EG050F: Hexavalent Chromium	1856072979	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK0) AG: Free cbl Nsde 9b i svcreVe	de 9b i svcrevé n NI Dover Corp	p SoV 188-3A) a							
EM11065517001	Anonymous	EK025G: Free Cyanide	<i>1111</i>	900.0	mg/L	<0.006	<0.006	0.0	No Limit
EM11065pp7008	Anonymous	EK025G: Free Cyanide	<i>1111</i>	900.0	mg/L	0.168	0.159	6.+	0% 720%
EK0) - G: HoV Dpbl N	EK0) - G: HoV Dobl Nede BbisvcreVen NIDover Ofp SoV 188-3A8a	[p SoV 188- 3A8a							
EM11066257006	Anonymous	EK02+G: Total Cyanide	5p71275	900.0	mg/L	>0.006	<0.006	0.0	No Limit
EM1106+097002	Anonymous	EK02+G: Total Cyanide	5p71275	9000	mg/L	<0.006	<0.006	0.0	No Limit
EK0) PG: Welknosd	isvvocsi9DepblNsdeBbis	EKO) PG: Welk ncsd i svvocsl 9 0e pbl Nsde Bbi svcre Ven Ni Obver Of p So V 1884 00 1 a							
EM11061807001	Anonymous	EK028G: Weak Acid Dissociable Cyanide	ш.	900.0	mg/L	<0.006	<0.006	0.0	No Limit
EM11061807011	Anonymous	EK028G: Weak Acid Dissociable Cyanide	ш	900.0	mg/L	<0.006	<0.006	0.0	No Limit
EK040y: Follorsde 9b yp Hstri Vor	o yp Hs/I Vor Q p SoV 188330) a	30) a							
EM11065257001	Anonymous	EK060P: Fluoride	1+98676878	0.1	mg/L	0.8	0.8	0.0	No Limit
EM110653+7001	Anonymous	EK060P: Fluoride	1+98676878	0.1	mg/L	0.+	0.+	0.0	No Limit
EK0AAG: nt t oNs I	EKO AAG: ntto Nail vigbisvcreNe n NiDover Ofp So V 1884)34a	ℤ p SoV 1884) 34a							
EM11065517001	Anonymons	EK055G: Ammonia as N	p++67617p	0.01	mg/L	<0.01	<0.01	0.0	No Limit



: 5 of 16 : EM1106559 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS Sub Matrix: Wn HEL

Page Work Order

Proect Client

Sub™atrix: Wn HEL						Laboratory I	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EKOAAG: nt t oNs I v	rl 9bisvcreVenNiDover (EKOAAG: nt to Ns Iv I9bisvcreven NIDover Ofp So V 1884) 34a 2 convenued							
EM11065p1700+	Anonymous	EK055G: Ammonia as N	p++67617p	0.01	mg/L	1p.0	1+.2	2.0	0% 720%
EKOA8G: I SITSLE I VI	9bisvcreVenNiDover Of p	p SoV 1884138a							
EM11065627001	Anonymous	EK05pG: Nitrite as N	11111	0.01	mg/L	0.01	0.01	0.0	No Limit
EM1106562702p	Anonymous	EK05pG: Nitrite as N	<i>11111</i>	0.01	mg/L	0.02	0.02	0.0	No Limit
EKOAMG: I SA'SAE (Dav I SA'I VE I V I		Q Oxa 9b i sycreVe nNI Dover Q p SoV 1884) 33a							
EM1106562700+	Anonymous	EK059G: Nitrite w Nitrate as N	<i>11111</i>	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM11065517001	Anonymous	EK059G: Nitrite w Nitrate as N	Ш.	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK081G: Lel cV66e y h	ov(horuv I v y 9b dsvcreVe	EK 081 G: Leic MSe yhov (horuv iv y 9 b dsv creNe iNiDover Cip So V 1884 141 a							
EM11065597001	GWp	EK0p1G: Reactive Phos4horus as P	11111	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM11065+9700+	Anonymous	EK0p1G: Reactive Phos4horus as P	11111	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK0PAM: 5 uDscle I v 5) 2 CTp SoV 1883m Pa) 2 Q p SoV 1883m Pa								
EM110660p7001	Anonymous	EK085: Sulfide as S27	1869+72578	1.0	mg/L	32.8	32.8	0.0	0% 720%
EM11066p57006	Anonymous	EK085: Sulfide as S27	1869+72578	0.1	mg/L	<0.1	<0.1	0.0	No Limit
Ey 084n: MoNocbcBc	Ey 084n: MoNocbcBc nrot INsc Cbdrocir9 oNv Crp SoV 188-PmAa	7 p SoV 188- PmAa							
EM11065597001	GWp	EP0p6: Styrene	10076275	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: Iso4ro4ylben@ne	9878278	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: nPro4ylben@ne	1037+571	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: 1.3.57Trimethylben@ne	10874p78	22	hg/L	<5	^ 2	0.0	No Limit
		EP0p6: sec Butylben@ne	13579878	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: 1.2.67Trimethylben@ne	957+37+	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: tert Butylben @ne	9870+7+	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: 47so4ro4yltoluene	9978p7+	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: nrButylben@ne	10675178	2	µg/L	<5	<5	0.0	No Limit
Ey 084B: OxbgeNI Ved	Ey084B: OxbgeNIVed pot (ouNdv CTp SoV 188-PmAa	3- PmAa							
EM11065597001	GWp	EP0p6: Vinyl Acetate	10870576	20	hg/L	<50	<50	0.0	No Limit
		EP0p6: 27Butanone (MEK)	p879373	20	hg/L	<50	<50	0.0	No Limit
		EP0p6: 6孙ethyl7274entanone (MIBK)	10871071	20	hg/L	<50	<50	0.0	No Limit
		EP0p6: 27Hexanone (MBK)	5917p87+	20	hg/L	<50	<50	0.0	No Limit
Ey 084p: 5 uBoNI Ved p	Ey 084p: 5 ulboNIVed pot (ouNdv CTp SoV 188-PmAa	PrrAa							
EM11065597001	GWp	EP0p6: Carbon disulfide	p571570	2	hg/L	<5	<5	0.0	No Limit
Ey 084 i: Fut sgl NW C	Q p SoV 188-PmAa								
EM11065597001	GWp	EP0p6: 2.2 Dichloro4ro4ane	5967207p	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: 1.2Dichloro4ro4ane	p878p75	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: cis71.37Dichloro4ro4ylene	100+170175	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: trans71.37Dichloro4ro4ylene	100+17027+	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: 1.27Dibromoethane (EDB)	10+79376	2	hg/L	<5	^ 2	0.0	No Limit
Ey 084E: CI DogeNIVed	Ey 084 E: Clooge Nived noof hive pot (oun door of p So V 188-PmAa	p SoV 188- Pm²a							
EM11065597001	GWp	EP0p6: 1.1 Dichloroethene	p573576	2	µg/L	<5	<5	0.0	No Limit



: + of 16 : EM1106559 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS Page Work Order Client

Pro-ect

Sub7Matrix: Wn HEL						Laboratory D	Laboratory Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Ey 084E: CI DogeNIVed	dn Bell Vec pot (ou Ndv Ori	Ey 084E: CI Doge Nived n Daynive pot (ou Ndv Orp So V. 188-PmAns 2 co NAS Nued							
EM11065597001	GWp	EP0p6: Iodomethane	p678876	2	hg/L	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<5	0.0	No Limit
		EP0p6: trans71.27Dichloroethene	15+7+075	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: 1.17Dichloroethane	p573673	2	µg/L	<5	^ 2	0.0	No Limit
		EP0p6: cis7l.27Dichloroethene	15+75972	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: 1.1.1丌richloroethane	p17557+	5	µg/L	<5	<5	0.0	No Limit
		EP0p6: 1.17Dichloro4ro4ylene	5+37587+	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: Carbon Tetrachloride	5+72375	2	µg/L	<5	^2	0.0	No Limit
		EP0p6: 1.27Dichloroethane	10p70+72	2	µg/L	<5	^ 2	0.0	No Limit
		EP0p6: Trichloroethene	p97017+	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: Dibromomethane	p679573	2	µg/L	<5	^2	0.0	No Limit
		EP0p6: 1.1.27Trichloroethane	570076q	5	µg/L	<5	<5	0.0	No Limit
		EP0p6: 1.37Dichloro4ro4ane	16272879	5	µg/L	<5	<5	0.0	No Limit
		EP0p6: Tetrachloroethene	12p71876	2	µg/L	<5	^2	0.0	No Limit
		EP0p6: 1.1.1.2Л etrachloroethane	+307207+	5	µg/L	<5	<5	0.0	No Limit
		EP0p6: trans7.6Dichloro22butene	11075p7+	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: cis71.67Dichloro727butene	16p+71175	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: 1.1.2.2Лetrachloroethane	7973675	2	hg/L	<5	<5	0.0	No Limit
		EP0p6: 1.2.3∏richloro4ro4ane	9+71876	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: Pentachloroethane	p+7017p	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: 1.27Dibromo737chloro4ro4ane	9+71278	2	µg/L	~ 2	<5	0.0	No Limit
		EP0p6: Hexachlorobutadiene	8p7+873	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: Dichlorodifluoromethane	p57p178	20	µg/L	<50	<50	0.0	No Limit
		EP0p6: Chloromethane	p678p73	20	hg/L	<50	<50	0.0	No Limit
		EP0p6: Vinyl chloride	p570176	20	µg/L	<50	<50	0.0	No Limit
		EP0p6: Bromomethane	p678379	20	µg/L	<50	<50	0.0	No Limit
		EP0p6: Chloroethane	p570073	20	µg/L	<50	<50	0.0	No Limit
		EP0p6: Trichlorofluoromethane	p57+976	50	µg/L	<50	<50	0.0	No Limit
Ey 084F: CI DogeNI Ved	Ey084F:ClDogeNIVed nrotIVscpot (ouNdv C7pSoV/188-PmAa	p SoV 188- PmAa							
EM11065597001	GWp	EP0p6: Chloroben@ne	1087907p	5	µg/L	<5	<5	0.0	No Limit
		EP0p6: Bromoben@ne	10878+71	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: 27Chlorotoluene	9576978	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: 67Chlorotoluene	10+76376	5	µg/L	<5	<5	0.0	No Limit
		EP0p6: 1.3和ichloroben@ne	56179371	5	µg/L	<5	<5	0.0	No Limit
		EP0p6: 1.67Dichloroben@ne	10+76+7p	2	µg/L	<5	<5	0.0	No Limit
		EP0p6: 1.2和ichloroben@ne	9575071	5	µg/L	<5	<5	0.0	No Limit
		EP0p6: 1.2.6Trichloroben@ne	12078271	5	µg/L	<5	<5	0.0	No Limit
		EP0p6: 1.2.3Trichloroben@ne	8p7+17+	5	µg/L	<5	<5	0.0	No Limit
Ey 084G: Hrshi Dot eVh	Ey 084G: Hirshiloot e Whil Nev Of p So V 188-PmAa								
EM11065597001	GWp	EP0p6: Chloroform	57++7d+	2	hg/L	<5	<5	0.0	No Limit
_		-							



ALS

ENVIRONMENTAL EARTH SCIENCES

p of 16 EM1106559 Amendment 1

Work Order

Client Pro-ect

2100p6 ALBERT PARK GASWORKS

Recovery Limits (%) No Limit RPD (%) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Laboratory Duplicate (DUP) Report Original Result Duplicate Result 2 \$ <20 <20 7 7 Δ, Ω ²2 V 7 <20 <20 \$ \$ ^5 7 7 7 Δ, δ, V hg/L hg/L hg/L hg/L hg/L Unit hg/L hg/L hg/L hg/L hg/L LOR 2 2 2 20 20 7 0 7 7 2 p176372 p572p76 p572572 12676871 9576p7+ 9172073 CAS Number 10878873 10076176 10873873 10+76273 Ey 0P0/081: HoV DLeco6erl 9De Cbdrocl r9 oNv 21 Ey M) 010 i rl fV Q p SoV 188-Pm a EP0p6: Dibromochloromethane EP0p6: Bromodichloromethane EP080: meta7& 4ara7Xylene EP080: C+ 7C10 Fraction EP080: C+ 7C9 Fraction EP080: Ethylben@ne EP080: ortho7Xylene EP080: Na4hthalene EP0p6: Bromoform Method: Compound EP080: Ben@ne EP080: Toluene Ey 0P0/081: HoV Dy eV o But Cbdrocl r9 o Nv Q p So V 188- Pm a Ey 084G: Hrsh lot eVri Nev Q p SoV 188- Pπλα 2 conveNued EM11065597001 GWp EP0p6: Βr Client sample ID Ey0P0: BHEXI Q p SoV 188- Pm a EM1106559701 GWp GWp GWp Laboratory sample ID Sub Matrix: Wn HEL EM11065597001 EM11065597001



: 8 of 16 : EM1106559 Amendment 1 Work Order Client

ENVIRONMENTAL EARTH SCIENCES 2100p6 ALBERT PARK GASWORKS Proect

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

4arameter is to monitor 4otential laboratory contramination. The quality control term Laboratory Control Sam4le (LCS) refers to a certified reference material, or a knoz n interference free matrix s4iked z ith target The quality control term Method / Laboratory Blank refers to an analyte free matrix to 2 hich all reagents are added in the same volumes or 4ro4ortions as used in standard sam4le 4re4aration. The 4ur4ose of this QC analytes. The 4ur4ose of this QC 4arameter is to monitor method 4recision and accuracy inde4endent of sam4le matrix. Dynamic Recovery Limits are based on statistical evaluation of 4rocessed LCS.

	•		•	`				
Sub Matrix: Wn HEL				Method Blank (MB)		Laboratory Control Spike (LCS) Report	S) Report	
	-			мероп	Spike	Spike Recovery (%)	Recovery Limits (%)	imits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	Low	High
En 01A: HoV Disvo Bed 50 Balv Qp SoV 1883 P81a								
EA015H: Total Dissolved Solids j 180°C	GIS72107010	5	mg/L	<5	2000 mg/L	101	86	106
Ei 038y:n Dki DaNab 9b yp Hafil Vor CT p SoV 1883304a								
ED03p7P: Total Alkalinity as CaCO3	<i>IIII</i>	1	mg/L	1111	200 mg/L	92.5	dd	12p
Ei041G:5uDlVeOHur9sdsteVrscalv5O4)29bin O7pSoV1	Q p SoV 188411- a							
ED061G: Sulfate as SO6 7Turbidimetric	168087978	1	mg/L	-1>	12.5 mg/L	+:d6	81	125
Ei 04AG: phobrade i sycrete INI Obver Of pSoV 188413Pa								
ED065G: Chloride	1+88p7007+	1	mg/L	-1>	1000 mg/L	111	89	11p
Ei 0m3F:isvvo Bed Mijor pl Ko Nv Of p So V 1884140a								
ED093F: Calcium	p6607p072	1	mg/L	1>	5 mg/L	116	81	129
ED093F: Magnesium	p63979576	_	mg/L	^	5 mg/L	10p	80	120
ED093F: Sodium	p66072375	1	mg/L	^	50 mg/L	105	8d	126
ED093F: Potassium	p6607097p	1	mg/L	7	50 mg/L	119	6d	121
EG0) 0F: i svo Bed MeV By 9b Tpy 2M5 Qt p So V 188-8-Pa								
EG020AÆ: Aluminium	p62979075	0.01	mg/L	<0.01	0.5 mg/L	102	80	120
EG020A7F: Arsenic	p66073872	0.001	mg/L	<0.001	0.1 mg/L	93.+	8p	109
EG020A7F: Cadmium	p66076379	0.0001	mg/L	<0.0001	0.1 mg/L	96.3	88	110
EG020A开: Cobalt	p66076876	0.001	mg/L	<0.001	0.1 mg/L	92.5	8p	111
EG020ATF: Co44er	p66075078	0.001	mg/L	<0.001	0.1 mg/L	90.6	+8	108
EG020A7F: Lead	p63979271	0.001	mg/L	<0.001	0.1 mg/L	100	06	110
EG020A7F: Manganese	p63979+75	0.001	mg/L	<0.001	0.1 mg/L	93.1	8p	111
EG020A7F: Nickel	p66070270	0.001	mg/L	<0.001	0.1 mg/L	92.2	8+	112
EG020A7F: Selenium	pp8276972	0.01	mg/L	<0.01	0.1 mg/L	95.2	83	111
EG020ATF: Zinc	p6607++7+	0.005	mg/L	<0.005	0.1 mg/L	95.+	+8	120
EG020A形: Boron	p66076278	0.05	mg/L	<0.05	0.1 mg/L	106	+1	133
EG020A开: Iron	p6397897+	0.05	mg/L	<0.05	0.5 mg/L	95.2	6d	119
EG03AF: i svoßed Mercurb 9b FTM5 CT p SoV 188-8-8a								
EG035F: Mercury	p63979p7+	0.0001	mg/L	<0.0001	0.0100 mg/L	+.06	p1	125
EG0A0F: is savo Bed Cexi 61 BeN phrot sut Q p So V 188 P418a	8a							
EG050F: Hexavalent Chromium	1856072979	0.01	mg/L	<0.01	0.5 mg/L	102	80	120
EKO) AG: Free cbi Node 9b i svcrevé n Ni Dover Corp SoV 188-3A) a	3A) a							
EK025G: Free Cyanide	<i></i>	900.0	mg/L	>0.006	0.5 mg/L	9.6d	p3	111
EK0) - G: Ho V Do bli Node Bbi svcre Ve n Ni Dover Corp So V 188-3 A8a								
EK02+G: Total Cyanide	5p71275	900.0	mg/L	>0.006	0.2 mg/L	111	85	125

A Campbell Brothers Limited Company



(S)

ENVIRONMENTAL EARTH SCIENCES 2100p6 ALBERT PARK GASWORKS

EM1106559 Amendment 1

Work Order

Client Pro-ect

9 of 16

High 106 120 112 12p 108 7+ 120 120 119 119 119 131 38 12p 128 118 120 126 122 121 12 13+ 121 Recovery Limits (%) MO7 p0 p3 p3 p3 p4 p3 ရှု တူ ထူ 4 a a ‡ 9 86 БЗ 86 82 29 80 80 t_d Laboratory Control Spike (LCS) Report Spike Recovery (%) 89.9 91.2 92.6 96.p 96.3 9+.2 92.6 93.3 9+.3 95.8 95.0 105 SO7 p9.8 95.1 111 7 +.66 7 100 100 10+ 96. Concentration 200 µg/L 200 µg/L 200 µg/L 20 µg/L 20 µg/L 200 µg/L 20 µg/L 20 µg/L 0.5 mg/L 0.5 mg/L 0.5 mg/L 0.5 mg/L 0.5 mg/L 20 µg/L 0.5 mg/L 5 mg/L **Method Blank (MB)** Result <0.006 <0.01 Report <0.01 <0.01 <0.01 ٥ 0 ٥. م <50 <50 <50 <50 3 \$ \$ 5 2 5 3 \$ mg/L mg/L mg/L mg/L mg/L mg/L hg/L hg/L hg/L hg/L hg/L hg/L hg/L hg/L hg/L Unit mg/L hg/L 0.006 0.10 LOR 0.01 0.01 0.01 0.01 0.1 2 20 20 20 2 2 2 2 2 2 2 2 EKO) PG: Welk nosqi svvocsl 90e pbl Nsde Bbi svcreNe n NIOb ver CT p SoV 1884001a EKOAmG: Istate (Davistive Ivi Ot Oxa 9b isvcrete nNi Dover Of p So V 1884) 33a EK 081 G: Leic Vose y hov (horuv iv y 9 b dsvcre Ve i Ni Dover Of p So V 1884 141 a CAS Number p571570 p++67617p 1869+72578 9878278 1037+571 9870+74 9978p7+ 10675178 10871071 1+98676878 10076275 957+37+ p879373 5917p87+ 100+170175 10+79376 1087+p78 13579878 10870576 5967207p p878p75 100+17027+ EKOAAG: nt to Naivi 9b isvcrevé n Ni Dover Of p So V 1884) 34a Ey 084 n: MoNocbcBc nrot IN&c Cbdrocir9 o Nv O7 p So V 188-PmAa Ey 084 E: Clooge Nived nog hive pot (oundov Clop So V 188-Promba EK0A8G: Istativi 9bisvcreVenNiDover Corp SoV 1884138a Ey 084B: OxbgeNIVed pot (ouNdv C/p pSoV 188-PmAa Ey 084p: 5 ulbon Ved pot (oundv Q p SoV 188-PmAa EK040y: Follorsde 9byp Hskri Vor C7 pSoV 188330) a EKOPAM: 5 ubscle I v 5) 2 Qt p SoV 1883m Pa Ey 084 i: Fut sgINW OT p SoV 188-PmAa EK028G: Weak Acid Dissociable Cyanide EP0p6: 67Methyl7274entanone (MIBK) EK0p1G: Reactive Phos4horus as P EP0p6: trans71.37Dichloro4ro4ylene EP0p6: 1.27Dibromoethane (EDB) EP0p6: cis71.37Dichloro4ro4ylene EP0p6: 1.2.67Trimethylben@ne EP0p6: 1.3.57Trimethylben@ne EK059G: Nitrite w Nitrate as N EP0p6: 1.27Dichloro4ro4ane EP0p6: 2.27Dichloro4ro4ane EP0p6: 27Hexanone (MBK) EP0p6: 47so4ro4yltoluene EP0p6: 27Butanone (MEK) EP0p6: Iso4ro4ylben@ne EP0p6: sec?Butylben@ne EP0p6: tert/Butylben@ne EP0p6: n7Pro4ylben@ne EK055G: Ammonia as N EP0p6: n7Butylben@ne EP0p6: Carbon disulfide EK085: Sulfide as S27 EP0p6: Vinyl Acetate EK05pG: Nitrite as N Method: Compound Sub Matrix: Wn HEI EK060P: Fluoride EP0p6: Styrene



N A

: 10 of 16 : EM110659 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS

Page Work Order

Client Pro-ect

Sub Matrix: Wn HEL				Method Blank (MB)		Laboratory Control Spike (LCS) Report	CS) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Recovery Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	Low	High
N Ved n B(h I Vec p ot (ou Ndv	Q p SoV 188- PmAa 2 co NVANued							
EP0p6: Dichlorodifluoromethane	p57b178	50	µg/L	<50	200 µg/L	82.0	58	168
EP0p6: Chloromethane	p678p73	20	hg/L	<50	200 µg/L	8+.0	+2	162
EP0p6: Vinyl chloride	p570176	20	hg/L	<50	200 µg/L	p8.2	+	161
EP0p6: Bromomethane	p678379	50	hg/L	<50	200 µg/L	81.8	5p	131
EP0p6: Chloroethane	p570073	50	hg/L	<50	200 µg/L	99.p	9+	138
EP0p6: Trichlorofluoromethane	p57+976	50	hg/L	<50	200 µg/L	0+6	d+	131
EP0p6: 1.1 Dichloroethene	p573576	5	hg/L	<5	20 µg/L	9+.2	p1	125
EP0p6: lodomethane	p678876	5	hg/L	<5	20 µg/L	0.+6	+	135
EP0p6: trans71.27Dichloroethene	15+7+075	5	hg/L	<5	20 µg/L	98.8	p5	121
EP0p6: 1.17Dichloroethane	p573673	5	µg/L	<5	20 µg/L	101	dd	121
EP0p6: cis71.27Dichloroethene	15+75972	5	hg/L	<5	20 µg/L	100	8d	122
EP0p6: 1.1.17Trichloroethane	p17557+	2	hg/L	~ 22	20 µg/L	95.1	0d	120
EP0p6: 1.1 Dichloro4ro4ylene	5+37587+	5	hg/L	<5	20 µg/L	99.1	9d	122
EP0p6: Carbon Tetrachloride	5+72375	2	hg/L	<5	20 µg/L	8+.2	5p	123
EP0p6: 1.27Dichloroethane	10p70+72	5	hg/L	<5	20 µg/L	9.66	p5	125
EP0p6: Trichloroethene	p97017+	5	hg/L	<5	20 µg/L	101	dd	121
EP0p6: Dibromomethane	p679573	5	hg/L	<5	20 µg/L	102	+d	122
EP0p6: 1.1.27Trichloroethane	p970075	5	hg/L	<5	20 µg/L	112	8d	12+
EP0p6: 1.37Dichloro4ro4ane	16272879	5	hg/L	<5	20 µg/L	109	6d	125
EP0p6: Tetrachloroethene	12p71876	5	µg/L	<5	20 µg/L	10+	+d	122
EP0p6: 1.1.1.27Tetrachloroethane	+307207+	2	hg/L	<5	20 µg/L	9b.+	+2	119
EP0p6: trans71.67Dichloro727butene	11075p7+	2	hg/L	<5	20 µg/L	91.5	+9	12+
EP0p6: cis71.67Dichloro727butene	16p+71175	2	hg/L	<5	20 µg/L	103	26	132
EP0p6: 1.1.2.27Tetrachloroethane	p973675	2	hg/L	~ 2	20 µg/L	116	p5	131
EP0p6: 1.2.37Trichloro4ro4ane	9+71876	2	hg/L	<5	20 µg/L	123	p5	133
EP0p6: Pentachloroethane	p+7017p	5	hg/L	<5	20 µg/L	83.1	+9	118
EP0p6: 1.2ƊibromoƁ&hloro4ro4ane	9+71278	2	hg/L	<5	20 µg/L	10+	26	126
EP0p6: Hexachlorobutadiene	8p7+873	2	µg/L	~ 2	20 µg/L	89.+	20	136
Ey 084 F: Cl Doge NIVed nrot IVsc pot (oundov Cl p SoV 188-PmAa								
EP0p6: Chloroben@ne	1087907p	2	hg/L	<5	20 µg/L	108	81	121
EP0p6: Bromoben@ne	10878+71	2	hg/L	<5	20 µg/L	8.d6	p5	119
EP0p6: 27Chlorotoluene	9576978	2	hg/L	<5	20 µg/L	93.2	p3	121
EP0p6: 67Chlorotoluene	10+76376	2	hg/L	<5	20 µg/L	8.96	p2	120
EP0p6: 1.37Dichloroben@ne	56176371	2	µg/L	<5	20 µg/L	105	p3	119
EP0p6: 1.67Dichloroben@ne	10+76+7p	2	hg/L	<5	20 µg/L	105	9d	120
EP0p6: 1.27Dichloroben@ne	9575071	2	hg/L	<5	20 µg/L	106	p8	118
EP0p6: 1.2.67Trichloroben@ne	12078271	2	µg/L	<5	20 µg/L	9p.2	2+	128
EP0p6: 1.2.37Trichloroben@ne	8p7+17+	5	µg/L	~ 2	20 µg/L	101	6+	123
Ey084G: Hrshiloot eVhiloev Of pSoV 188- PraAa								



STA STATE

: 11 of 16 : EM1106559 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS

Page Work Order Client Pro-ect

Sub Watrix: Wn HEL				Method Blank (MB)		Laboratory Control Spike (LCS) Report	CS) Report	
				Report	Spike	Spike Recovery (%)	Recovery Limits (%)	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SOT	Low	High
Ey 084G: Hrshi Dot eVhi Nev Of p SoV 188- Proda 2 convenued								
EP0p6: Chloroform	+p7++73	2	hg/L	<5	20 µg/L	100	dd	121
EP0p6: Bromodichloromethane	p572p76	2	hg/L	<5	20 µg/L	95.2	6+	11p
EP0p6: Dibromochloromethane	12676871	2	hg/L	<5	20 µg/L	+.+0	29	119
EP0p6: Bromoform	p572572	5	hg/L	<5	20 µg/L	96.1	69	121
Ey08AGE MAB: yo Do Nuc De Ir nrot INc Codrocirgo Nv C pSoV 1884Pa	/ 188 4Pa							
EP0p5(SIM): Na4hthalene	9172073	_	hg/L	<1.0	5 µg/L	50.+	2p.5	126
EP0p5(SIM): Acena4hthylene	20879+78	-	hg/L	<1.0	5 µg/L	+0.3	35	129
EP0p5(SIM): Acena4hthene	8373279	_	hg/L	<1.0	5 µg/L	51.0	35	12p
EP0p5(SIM): Fluorene	8+7p37p	_	hg/L	<1.0	5 µg/L	55.0	3+	130
EP0p5(SIM): Phenanthrene	8570178	-	hg/L	<1.0	5 µg/L	59.8	62	132
EP0p5(SIM): Anthracene	1207127p	-	hg/L	<1.0	5 µg/L	5p.8	62	132
EP0p5(SIM): Fluoranthene	20+76670	_	hg/L	<1.0	5 µg/L	+6.0	61	161
EP0p5(SIM): Pyrene	12970070	_	hg/L	<1.0	5 µg/L	d.++	09	162
EP0p5(SIM): Ben@a)anthracene	5+75573	_	hg/L	<1.0	5 µg/L	8p.2	33	153
EP0p5(SIM): Chrysene	21870179	-	hg/L	<1.0	5 µg/L	8.++	35	165
EP0p5(SIM): Ben@(b)fluoranthene	20579972	-	hg/L	<1.0	5 µg/L	86.8	35	151
EP0p5(SIM): Ben@(k)fluoranthene	20p70879	1	hg/L	<1.0	5 µg/L	+3.3	39	161
EP0p5(SIM): Ben@(a)4yrene	5073278	0.5	hg/L	<0.5	5 µg/L	p0.0	61	139
EP0p5(SIM): Indeno(1.2.3.cd)4yrene	19373975	1	hg/L	<1.0	5 µg/L	d:++	35	161
EP0p5(SIM): Diben@a.h)anthracene	5376073	-	hg/L	<1.0	5 µg/L	6.++	3+	162
EP0p5(SIM): Ben@(g.h.i)4erylene	19172672	7-	hg/L	<1.0	5 µg/L	+8.1	10	162
Ey 0P0/081: HoV Dy eVore ut Cbdroci r9 oNv Q p SoV 1884-a	e i							
EP0p1: C10 7C16 Fraction	<i>IIII</i>	20	hg/L	<50	5660 µg/L	9b.6	9+	126
EP0p1: C15 7C28 Fraction	11111	100	hg/L	<100	1p826 µg/L	85.5	0d	130
EP0p1: C29 7C3+ Fraction	Ш.	50	hg/L	<50	3+96 µg/L	88.2	8+	128
Ey 0P0/081: HoV Dy eVforbut Cbdrocl r9 oNv Q p SoV 188-Pm a	a a							
EP080: C+ 7C9 Fraction	11111	20	hg/L	<20	320 µg/L	102	p2	13+
Ey 0P0/081: HoV DLeco6erl 9 B Cbdrocl r9 oNv 21 Ey M) 010 i rl fV Q p So V 1884-a	rl fV Q p SoV 18	384-a						
EP0p1: >C10 7C1+ Fraction	<i>IIII</i>	100	hg/L	<100	10320 µg/L	p5.2	0d	130
EP0p1: >C1+ 7C36 Fraction	Ш.	100	hg/L	<100	1++60 µg/L	85.9	0d	130
EP0p1: >C36 7C60 Fraction	<i>IIII</i>	100	hg/L	<100	1080 µg/L	98.1	0d	130
Ey 0P0/081: HoV DLeco6erl 9De Cbdrocl r9 oNv 21 Ey M) 010 i r1 fV Ct p So V 188-Pm a	rl fV Q p SoV 18	88- Pm a						
EP080: C+ 7C10 Fraction	<i>IIII</i>	20	hg/L	<20	3p0 µg/L	102	0d	130
Ey 0P0: BHEXI Q p SoV 188- Pm a								
EP080: Ben@ne	p176372	1	hg/L	<1	20 µg/L	98.5	p3	12p
EP080: Toluene	10878873	2	hg/L	<2	20 µg/L	101	9d	128
EP080: Ethylben@ne	10076176	2	hg/L	<2	20 µg/L	9p.5	p2	12+

: 12 of 16 : EM1106559 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS

Page Work Order

Client Pro-ect

Sub™atrix: WnHEL				Method Blank (MB)		Laboratory Control Spike (LCS) Report	S) Report	
				Report	Spike	Spike Recovery (%)	Recovery Limits (%)	imits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	SO7	Low	High
Ey 0P0: BHEXI Of p So V 188-Pm a 2 co NVANued								
EP080: meta7 & 4ara7Xylene	10873873	2	hg/L	<2	60 µg/L	106	6+	133
	10+76273							
EP080: ortho7Xylene	9576p7+	2	µg/L	<2	20 µg/L	98.8	9d	128
EP080: Na4hthalene	9172073	S	hg/L	<5	5 µg/L	90.2	0d	130



 Page
 : 13 of 16

 Work Order
 : EM1106559 Amendment 1

 Client
 : ENVIRONMENTAL EARTH SCIENCES

 Pro-ect
 : 2100p6 ALBERT PARK GASWORKS

Matrix Spike (MS) Report

The quality control term Matrix S4ike (MS) refers to an intralaboratory s4lit sam4le s4iked z ith a re4resentative set of target analytes. The 4ur4ose of this QC 4arameter is to monitor 4otential matrix effects on analyte recoveries. Static Recovery Limits as 4er laboratory Data Quality Ob-ectives (DQOs). Ideal recovery ranges stated may be z aived in the event of sam4le matrix interference.

Matrix Spike (MS) Report

Sub Matrix: Wn HEL

			Snike	Snike Becovery (%)	Recovery	Recovery Limits (%)
			oundo	de la constanta	f : :- :- :- :- :- :- :- :- :- :- :- :-	
Laboratory sample ID Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
Ei041G:5 uDN VeOAhur9sdste Vescalv5O4)29bin CorpS	Q p SoV 188411- a					
EM11065937005 Anonymous	ED061G: Sulfate as SO6 7Turbidimetric	168087978	10 mg/L	# Not Determined	0d	130
Ei 04AG: phobrade i svcreNe INIOb ver Of p SoV 188413Pa	o a					
EM11065627003 Anonymous	ED065G: Chloride	1+88p7007+	6000 mg/L	10+	0d	130
EG0) 0F: is/vollsed MeV Dv9 b Toy 2/1/5 Of p SoV 188-8-Pa	Pa					
EM11065597001 GWp	EG020AÆ: Arsenic	p66073872	0.2 mg/L	93.2	88	139
	EG020AÆ: Cadmium	p66076379	0.05 mg/L	113	p5	131
	EG020AÆ: Cobalt	p66076876	0.2 mg/L	116	dd	129
	EG020AÆ: Co44er	p66075078	0.2 mg/L	12+	p1	12p
	EG020AÆ: Lead	p63979271	0.2 mg/L	112	p1	123
	EG020AÆ: Manganese	p63979+75	0.2 mg/L	6.dd	‡	132
	EG020AÆ: Nickel	p66070270	0.2 mg/L	+11	p3	129
	EG020AÆ: Zinc	p6607++7+	0.2 mg/L	119	8+	13+
EG03AF: isvo Bed Mercurb 9b FTM5 CTp SoV 188-8-8a	3a					
EM11065597002 GW2+	EG035F: Mercury	p63978p7+	0.0100 mg/L	8p.2	0d	130
EG0A0F: is svo Bed Cexi 61 BeN/phrot sut QpSoV 188P418a	8P418a					
EM11065517002 Anonymous	EG050F: Hexavalent Chromium	1856072979	0.5 mg/L	+:+6	0d	130
EKO) AG: Free cbl Nade 9b i svcreNe n NI Dover Of p So V 188-3A) a	188-3A) a					
EM11065517002 Anonymous	EK025G: Free Cyanide	1111	0.5 mg/L	99.p	0d	130
EK0) - G: Ho V Do bli Node Bbisvcre Ven Ni Dover Of p So V 188-3 A8a	188-3 <i>A</i> 8a					
EM11065197001 Anonymous	EK02+G: Total Cyanide	5p71275	0.2 mg/L	112	0d	130
EK0) PG: Welk ncsdisvocs 90s pbl Nsde BbisvcreVenNl Dover	n NI Dover Q p SoV 1884001a					
EM11061807002 Anonymous	EK028G: Weak Acid Dissociable Cyanide	Ш.	0.5 mg/L	95.5	0d	130
EK040y: FDuorsde 9byp Hskrl Vor CrpSoV 188330) a						
EM110653+7001 Anonymous	EK060P: Fluoride	1+98676878	5.0 mg/L	106	0d	130
EKOAAG: nt to Neivi 9b isvcreve nNi Dover Crp So V 1884) 34a	/ 1884) 34a					
EM11065517002 Anonymous	EK055G: Ammonia as N	p++67617p	0.5 mg/L	105	0d	130
EK0A8G: Istrate Iv I9bisvcre Ven NIDover Corp So V 1884 138a	384138a					
EM11065627003 Anonymous	EK05pG: Nitrite as N	1111	0.5 mg/L	11p	0d	130
EKOAnG: Istské (Daviskí Velví OtOxa 9b isvcreNén NiDover CrpSoV 1884) 33a	IN Dover Q p SoV 1884) 33a					
EM1106562700p Anonymous	EK059G: Nitrite w Nitrate as N	1111	0.5 mg/L	98.9	0d	130
ese y ho	ver Q pSoV 1884141a					
EM11065597002 GW2+	EK0p1G: Reactive Phos4horus as P	1111	0.5 mg/L	103	0d	130



: 16 of 16 : EM1106559 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 2100p6 ALBERT PARK GASWORKS

Page Work Order Client Proect

Sub7Matrix: WnHEL

Sub Matrix: Wn HEL					Matrix Spike (MS) Report	ד	
				Spike	Spike Recovery (%)	Recovery Limits (%)	imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
Ey 084E: CI DogeNIVed	Ey 084 E: Cl Doge Nived n Day hive pot (ou Ndv Og p So V 188-PmAa						
EM11065597002	GW2+	EP0p6: 1.1 Dichloroethene	p573576	20 µg/L	0.+q	56	106
		EP0p6: Trichloroethene	p970174	20 µg/L	88.p	+2	120
Ey 084 F: CIDogeNIVed	Ey 084 F: Cl Doge Nived nrot INsc pot (ou Notv Cl p So V 188-PmAs						
EM11065597002	GW2+	EP0p6: Chloroben@ne	1087907p	20 µg/L	91.8	8+	132
Ey 0P0/081: HoV Dy eV	Ey 0P0/081: HoV Dye Vo But Cbdroclr9o Nv Q p So V 188-Pm a						
EM11065597002	GW2+	EP080: C+ 7C9 Fraction	1111	280 µg/L	81.+	51	125
Ey 0P0/081: HoV DLec	Ey 0P0/081: HoV DL eco6erl 9 Be Cbdrocl r9 oNv 21 Ey M) 010 i rl fV C p SoV 188-Pm a	2 p SoV 188- Pm a					
EM11065597002	GW2+	EP080: C+ 7C10 Fraction	1111	330 µg/L	86.0	0d	130
Ey 0P0: BHEXI Q p SoV 188- Pm a	oV 188- Pm a						
EM11065597002	GW2+	EP080: Ben@ne	p176372	20 µg/L	80.1	+3	131
		EP080: Toluene	10878873	20 µg/L	83.+	+2	133



ANALYTICAL CHEMISTRY & TESTING SERVICES



Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

				3 requirement		
		Environmental Division Melbourne Carol Walsh 4 Westall Rd Springvale VIC Australia 3171	nviro.com	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement		
: 1 of 10		: Environmental Division Melbourne : Carol Walsh : 4 Westall Rd Springvale VIC Austr	: carol.walsh@alsenviro.com : +61-3-8549 9608 : +61-3-8549 9601	: NEPM 1999 Sche	: 30-MAY-2011	2
Page		Laboratory Contact Address	E-mail Telephone Facsimile	QC Level	Issue Date	No. of samples received No. of samples analysed
: EM1104559	Ξ.	: ENVIRONMENTAL EARTH SCIENCES : MR DAVID JAMES : P.O.BOX 2253 FOOTSCRAY VIC, AUSTRALIA 3011	: djames@eesi.biz : +61 96871666 : +61 03 96871844	: 210074 ALBERT PARK GASWORKS :		: ME/015/11 V3
Work Order	Amendment	Client Contact Address	E-mail Telephone Facsimile	Project Site	Sampler Order number	Quote number

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

Environmental Division Melbourne Part of the ALS Laboratory Group

4 Westall Rd Springvale VIC Australia 3171 Tel. +61-3-8549 9600 Fax. +61-3-8549 9601 www.alsglobal.com

A Campbell Brothers Limited Company



: ENVIRONMENTAL EARTH SCIENCES EM1104559 Amendment 1 Work Order Project Client

Analysis Holding Time Compliance

210074 ALBERT PARK GASWORKS

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 for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date 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 Summary of Outliers. Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: WATER					Evaluation:	× = Holding time	Evaluation: x = Holding time breach; $$ = Within holding time.	holding time.
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005: pH								
Clear Plastic Bottle - Natural GW7,	GW26	02-MAY-2011		-	!	05-MAY-2011	02-MAY-2011	×
EA015: Total Dissolved Solids								
Clear Plastic Bottle - Natural GW7,	GW26	02-MAY-2011	ł	I	!	05-MAY-2011	09-MAY-2011	>
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural GW7,	GW26	02-MAY-2011	1	16-MAY-2011	I	04-MAY-2011	16-MAY-2011	>
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural GW7,	GW26	02-MAY-2011	l	30-MAY-2011	I	07-MAY-2011	30-MAY-2011	>
ED045G: Chloride Discrete analyser								
Clear Plastic Bottle - Natural GW7,	GW26	02-MAY-2011	1	30-MAY-2011	1	07-MAY-2011	30-MAY-2011	>
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Natural GW7,	GW26	02-MAY-2011		09-MAY-2011		06-MAY-2011	09-MAY-2011	>
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Natural GW7,	GW26	02-MAY-2011	l	29-OCT-2011		09-MAY-2011	29-OCT-2011	>
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural GW7,	GW26	02-MAY-2011	I	30-MAY-2011	I	09-MAY-2011	30-MAY-2011	>
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH GW7,	GW26	02-MAY-2011	-			09-MAY-2011	30-MAY-2011	>
EK025G: Free cyanide by Discrete Analyser								
White Plastic Bottle-NaOH GW7,	GW26	02-MAY-2011	06-MAY-2011	16-MAY-2011	>	06-MAY-2011	16-MAY-2011	>



: 3 of 10 : EM1104559 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GASWORKS Page Work Order Client Project

Matrix: WATER				Evaluation:	x = Holding time	Evaluation: x = Holding time breach; V = Within holding time	holding time.
Method	Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026G: Total Cyanide By Discrete Analyser							
White Plastic Bottle-NaOH GW26	02-MAY-2011	06-MAY-2011	16-MAY-2011	>	06-MAY-2011	16-MAY-2011	>
EK028G: Weak Acid Dissociable Cyanide By Discrete Analyser							
White Plastic Bottle-NaOH GW26	02-MAY-2011	05-MAY-2011	16-MAY-2011	>	05-MAY-2011	16-MAY-2011	>
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural GW26 GW7,	02-MAY-2011	1	30-MAY-2011	-	04-MAY-2011	30-MAY-2011	>
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid GW26	02-MAY-2011	1	30-MAY-2011	1	06-MAY-2011	30-MAY-2011	>
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural GW26 GW7,	02-MAY-2011	-	04-MAY-2011		04-MAY-2011	04-MAY-2011	>
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid GW7,	02-MAY-2011	ı	30-MAY-2011	-	09-MAY-2011	30-MAY-2011	>
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural GW26	02-MAY-2011	1	04-MAY-2011	!	04-MAY-2011	04-MAY-2011	>
EK085M: Sulfide as S2-							
Clear Plastic Bottle - Natural GW7,	02-MAY-2011	I			05-MAY-2011	03-MAY-2011	×
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial- NaHSO4 or H2SO4 GW7,	02-MAY-2011	06-MAY-2011	16-MAY-2011	>	06-MAY-2011	16-MAY-2011	>
EP074B: Oxygenated Compounds							
Amber VOC Vial- NaHSO4 or H2SO4 GW26 GW7,	02-MAY-2011	06-MAY-2011	16-MAY-2011	>	06-MAY-2011	16-MAY-2011	>
EP074C: Sulfonated Compounds							
Amber VOC Vial- NaHSO4 or H2SO4 GW26 GW7,	02-MAY-2011	06-MAY-2011	16-MAY-2011	>	06-MAY-2011	16-MAY-2011	>
EP074D: Fumigants							
Amber VOC Vial- NaHSO4 or H2SO4 GW26 GW7,	02-MAY-2011	06-MAY-2011	16-MAY-2011	>	06-MAY-2011	16-MAY-2011	>
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial- NaHSO4 or H2SO4 GW7,	02-MAY-2011	06-MAY-2011	16-MAY-2011	>	06-MAY-2011	16-MAY-2011	>

A Campbell Brothers Limited Company



Page Work Order

: 4 of 10 : EM1104559 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GASWORKS

Client Project

Matrix: WAIER					Evaluation:	x = Holding time I	Evaluation: \times = Holding time breach; \checkmark = Within holding time.	holding time.
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial- NaHSO4 or H2SO4 GW7,	GW26	02-MAY-2011	06-MAY-2011	16-MAY-2011	>	06-MAY-2011	16-MAY-2011	>
EP074G: Trihalomethanes								
Amber VOC Vial- NaHSO4 or H2SO4 GW7,	GW26	02-MAY-2011	06-MAY-2011	16-MAY-2011	>	06-MAY-2011	16-MAY-2011	>
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved GW7,	GW26	02-MAY-2011	06-MAY-2011	09-MAY-2011	>	09-MAY-2011	15-JUN-2011	>
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved GW7,	GW26	02-MAY-2011	06-MAY-2011	09-MAY-2011	>	09-MAY-2011	15-JUN-2011	>
Amber VOC Vial- NaHSO4 or H2SO4 GW7,	GW26	02-MAY-2011	06-MAY-2011	16-MAY-2011	>	06-MAY-2011	16-MAY-2011	>
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft	2010 Draft							
Amber Glass Bottle - Unpreserved GW7,	GW26	02-MAY-2011	06-MAY-2011	09-MAY-2011	>	09-MAY-2011	15-JUN-2011	>
Amber VOC Vial- NaHSO4 or H2SO4 GW7,	GW26	02-MAY-2011	06-MAY-2011	16-MAY-2011	>	06-MAY-2011	16-MAY-2011	>
EP080: BTEXN								
Amber VOC Vial- NaHSO4 or H2SO4 GW7,	GW26	02-MAY-2011	06-MAY-2011	16-MAY-2011	>	06-MAY-2011	16-MAY-2011	>



Work Order Project Client

: 5 of 10 : EM1104559 Amendment 1

: ENVIRONMENTAL EARTH SCIENCES

: 210074 ALBERT PARK GASWORKS

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: x = Quality Control frequency not within specification; \checkmark = Quality Control frequency within specification.

					,		
Quality Control Sample Type			Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	ОC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	EK055G	2	18	11.1	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	16	12.5	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Fluoride by PC Titrator	EK040P	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Free CN by Discrete Analyser	EK025G	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Hexavalent Chromium - Dissolved	EG050F	_	80	12.5	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 (NOx) by Discrete Analyser	EK059G	2	16	12.5	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Hď	EA005	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	19	10.5	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfide as S2-	EK085	7	19	10.5	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	2	17	11.8	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)	EA015H	7	16	12.5	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	_	2	20.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	2	50.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Weak Acid Dissociable Cyanide By Discrete Analyser	EK028G	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	_	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	EK055G	_	18	5.6	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	_	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	_	16	6.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Fluoride by PC Titrator	EK040P	_	20	2.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Free CN by Discrete Analyser	EK025G	1	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Hexavalent Chromium - Dissolved	EG050F	1	80	12.5	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	1	20	2.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	_	16	6.3	5.0	>	
Nitrite as N by Discrete Analyser	EK057G	1	20	2.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	က	33.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	EK071G	_	19	5.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	2.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfide as S2-	EK085	1	19	5.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	17	5.9	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)	EA015H	~	16	6.3	5.0	`	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	_	16	6.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	i		?	;	2;	>	



Page Work Order Project Client

: 6 of 10 : EM1104559 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GASWORKS

Analytical Methods Laboratory Control Samples (LCS) - Continued		Č	- torrot		Doto (%)		Orality Coatrol Caporification
aboratory Control Samples / J.C.S.) - Continued	Method	00	Regular	Actual	Expected	Evaluation	
TPH Volatiles/BTEX	EP080	-	2	50.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	_	2	20.0	2.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Weak Acid Dissociable Cyanide By Discrete Analyser	EK028G	1	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	18	5.6	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	1	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	_	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	_	16	6.3	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
Free CN by Discrete Analyser	EK025G	_	20	2.0	2.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Hexavalent Chromium - Dissolved	EG050F	_	∞	12.5	2.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	_	20	2.0	2.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	-	16	6.3	2.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	_	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	_	က	33.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	_	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Sulfide as S2-	EK085	1	19	5.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	17	5.9	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)	EA015H	_	16	6.3	5.0	>	
TPH - Semivolatile Fraction	EP071	1	16	6.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	2	50.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	2	20.0	2.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Weak Acid Dissociable Cyanide By Discrete Analyser	EK028G	-	20	5.0	5.0	`	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	_	18	5.6	2.0	>	ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	_	20	5.0	2.0	`	ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	_	20	5.0	2.0	`	ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	_	16	6.3	2.0	>	ALS QCS3 requirement
Fluoride by PC Titrator	EK040P	_	20	5.0	2.0	`	ALS QCS3 requirement
Free CN by Discrete Analyser	EK025G	1	20	5.0	5.0	>	ALS QCS3 requirement
Hexavalent Chromium - Dissolved	EG050F	1	8	12.5	5.0	>	ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.3	5.0	>	ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	20	5.0	2.0	>	ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.3	2.0	>	ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	>	ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	17	5.9	5.0	>	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	2	20.0	2.0	>	ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	2	20.0	2.0	>	ALS QCS3 requirement
Weak Acid Dissociable Cyanide By Discrete Analyser	EK028G	1	20	5.0	5.0	>	ALS QCS3 requirement



 Page
 : 7 of 10

 Work Order
 : EM1104559 Amendment 1

 Client
 : ENVIRONMENTAL EARTH SCIENCES

 Project
 : 210074 ALBERT PARK GASWORKS

Brief Method Summaries

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

	L'Odfold	Modulis	Mathematical Committees
PH	EA005	WATER	APHA 21st ed. 4500. H+ B. pH of water samples is determined by ISE either manually or by automated pH meter.
Total Dissolved Solids (High Level)	EA015H	WATER	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 Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Chloride by Discrete Analyser	ED045G	WATER	APHA 21st ed., 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the 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	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)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Hexavalent Chromium - Dissolved	EG050F	WATER	APHA 21st ed., 3500 Cr-B. Samples are 0.45 um filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Free CN by Discrete Analyser	EK025G	WATER	APHA 21st ed., 4500-CN-C&N Free Cyanide is determined on samples after distillation using a pyridine- barbituric acid colouring reagent followed with an Discrete Analyser finish. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Cyanide By Discrete Analyser	EK026G	WATER	APHA 21st ed., 4500-CN-C & N Total Cyanide is determined from aqueous solutions after distillation with sulphuric acid. The resultant distillate is then captured in a caustic absorber solution followed by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)



 Page
 : 8 of 10

 Work Order
 : EM1104559 Amendment 1

 Client
 : ENVIRONMENTAL EARTH SCIENCES

 Project
 : 210074 ALBERT PARK GASWORKS

Analytical Methods	Method	Matrix	Method Descriptions
Weak Acid Dissociable Cyanide By Discrete Analyser	EK028G	WATER	APHA 21st ed., 4500-CN-C&N WAD Cyanide is determined from aqueous solutions after distillation with acetic acid. The resultant distillate is then captured in a caustic absorber solution followed by Discrete Analyser. 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 Discrete 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 Analyser	EK058G	WATER	APHA 21st ed., 4500-NO3- F. Nitrate is reduced to nitrite by way of a cadmium reduction column 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 (NOx) by Discrete Analyser	EK059G	WATER	APHA 21st ed., 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	APHA 21st ed., 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with 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)
Sulfide as S2-	EK085	WATER	APHA 21st ed., 4500-S2- D Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. After the supernatant is discarded, the resultant precipitate is then coloured using methylene blue indicator and measured using UV-VIS detection at 664nm. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Ionic Balance by PCT DA and ICPAES	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 ICPAES. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Volatile Organic Compounds	EP074	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions



: 9 of 10 : EM1104559 Amendment 1 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GASWORKS

Page Work Order Client Project

Preparation Methods	Method	Matrix	Method Descriptions
Free Cyanide	EK025-PR	WATER	APHA 21st ed., 4500 CN- C&N. The sample is distilled at natural pH. The CN is trapped in a caustic solution, and quanitified by colourimetry on FIA. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Cyanide	EK026-PR	WATER	APHA 21st ed., 4500 CN- C&N. The sample is distilled with H2SO4 releasing all bound cyanides as HCN. The CN is trapped in a caustic solution, and quanitified by colourimetry on FIA. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Weak Acid Dissociable Cyanide	EK028-PR	WATER	APHA 21st ed., 4500 CN- I&N. The sample is distilled with Acetic acid, selectively releasing the weakly bound metal cyanides as HCN. The CN is trapped in a caustic solution, and quanitified by colourimetry on FIA. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 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.



 Page
 : 10 of 10

 Work Order
 : EM1104559 Amendment 1

 Client
 : ENVIRONMENTAL EARTH SCIENCES

 Project
 : 210074 ALBERT PARK GASWORKS

Summary of Outliers

Outliers : Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID Client Sample ID	Client Sample ID	Analyte	CAS Number Data	Data	Limits Comment	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EM1104593-005	Anonymous	Sulfate as SO4 - Turbidimetric	14808-79-8 D	Not Determined	-	MS recovery not determined, background level greater than or equal to 4x spike level.

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

Regular Sample Surrogates

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

Outliers : Analysis Holding Time Compliance

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

Aatrix: WATER

Matrix: WATER							
Method		Extr	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)		Date extracted	Date extracted Due for extraction	n Days overdue	Date analysed	ılysis	Days
EA005: pH							
Clear Plastic Bottle - Natural GW7,	GW26	1	I	1	05-MAY-2011 02-MAY-2011	02-MAY-2011	ю
EK085M: Sulfide as S2-							
Clear Plastic Bottle - Natural GW7,	GW26	-	ļ	!	05-MAY-2011 03-MAY-2011	03-MAY-2011	7

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.





Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: EM1104608	Ď s :	0113124
i eggvy	OENVIRONMENTAL EARTH SCIENCES	bsr 3tsy8tC	o Evmit3vDgv)sefummP&vfMger3ctvg
i 3vysRy	oMAfuVI JufSVMEW	i 3vysRy	oi st3¢h s¢Pd
VtgPP	o: @	VtgPP	o4fhgPJseefA.fWtivrnseeffJfVcPytsesfY1j1
	I BB, W AVUfi J pV7 W AVbWfY011		
E@sre	o. 25 Dg Pw gg Probit	E@sre	oRst3603 sePdw sePgvmm13083D
, g @ - d3vg	09F1f8Faj 1FFF	, g@- d3vg	09F1@@T48f8F0a
IsRP1Dmg	o9F1f0Yf8Faj 1a44	ISRNDR	09F1@@T48f8F01
: t3zgRy	o5100j 4f\bxEA, f: VAKfG\Wh BAKWffAEX i QfBI f	(i fbgmge	oNE: Mf1888ffWRdg.c@fX)Yqsv.fVbW(i WMftg/cnfgDgvy
	EM1104104fVNufEM11041F1		
Bt. gtfvcDr gt			
i @@fvcDrgt		u sygfN&D - @FfAgRgmg.	004@IVU@011
W&D - egt		JPPcgfu syg	01Y@VU@011
Wyg			
		N3ŒlfBD-@PftgRgmg.	OT
(c3)gfvcDrgt	oMEI⁄01TI∕111 Y	N3@lfPsD-@PfsvsePg.	То

dnPftg-3tyfPc-gtPg.gPfsvG-tgm8cPftg-3tyPdf6nydfydnPftglgtgvPg0AgDPgPf8-e-6fy8fySgPRD-@)Pqf8PfPc-gtPg.0Veft-s gPF3lfydnFftg-3tyfdsmgfrggvfRbgRPg.fsv.fs-t3mg.flSt tgegsPg⊕

, driPli gtylurBygf3lfVvs@PHFRvysrvPfydgfl3e86rv frvl3tDsy8vo

- Ggvgtséi 3DDgvyP
 - VvsæJnRsæAgRceP
- Wctt3 sygfi 3vyt3ebnDryP

NV, VfVRRg.ng.fbsr3tsydtCla5T S/9

, drR. 3R-DgvyfrfrReg. frvf sRR3t. svRgf6rydftvv, Vf sRR3c. nsy8vftg/ crigDgvyPO

Signatories NsvRGh sv

, dnef. 3RcDgvyf ds Firggvfggeg Ryt3vmRoedfhn vg.frdfydgfscyd3tm-g.fPh vsy8tng Finv.mRoyg.frges6 of EogRyt3vmFhn vnvrfds Frggv Retting. f3cyfivfR3D-essvRg16 rydf-t3Rg. ctgRfP-gRtung. fivf51fi I Afr. styf110 Signatories

Accreditation Category
Mge 3ctvgfBt svrRP

Wgvr8tfWgDmn8⊜ynegfJvPtcDgvyfidgDnPy

NATA

WORLD RECOGNISED

ACCREDITATION

VRRig. nyg. fl.3tfR3D-essvRyffenydf JABKEI f1j05TO Environmental Division Melbourne
Part of the ALS Laboratory Group
4th gPs@A. W tv negil J NcPys@RYIj 1
Tel. +61-3-5549 9600 fl sx@F1@@148f8F01fiww.alsglobal.com
A Campbell Brothers Limited Company



: \$ 9 0 573L4
h 3tHBt. gt 0 EM1104F0a
i egyy
c 133R9, 0 5100j 4fVbXEA, f: VAKfGVWfh BAKWffAEXV, i GfBI fEM1104104fVNufEM11041F1

General Comments

, dgf svseQnRe4 - 13Rg. ctgPf cPg. f r G ydgf Evmm13VDgvyse4 ummmR8vf dsmgf rggvf.gmge8-g. f L13Df gPAsreRNg. f wygtvsys8vseaCf tgR8 vnkg. f - 13Rg. ctgPf PcRdf sPf yd3Rgf - creaRdg. f r G ydgf XVME. V f V: CV/ff VVM sv. f NE: N Ob. Jvf d3cPg gng. 8- g. f-13Rg. ctgRstgfgD-@Cg. fwfydgfsr PgvRgf3lf. 3RDgvyg. fRsv. st. R3tfr GRagvyftg/ cgPyO

h dgtgfD3nPctgf. gygtDrvsy8vfdsPfrggvf-gtL3tDg. pftgPc9pFstgftg-3tyg. f3vfsf. tCf6gndyfrsPPO

h dgtgfsttg-3tyg. f@Phydsvt)-qfgB-gfnfdn dgtfydsvfydgfbBApfydnPDsGr gf. cgfy8f- tnDstGTBD-@fgsytsRyk n gPsygf. 18y8vfsv. 18tfn/Pell.ggvyfBD-@fl3tfsvs@PPD

h dgrgfydgfbBAf3llsffg-3tyg. ftgPcogf. ntgtPfl13DFpsv. st. fbBAfydrFfDSGrgf. cgfy8fdn dfD3rPctgfR3vygvyfnPcLmRgvyfnPcD-egfjg. cRg. f6gn dygD-e8cg. d3tfDsytndryygtlgtgvRgo

h douthed - ar indianistosyarithy 34-13 m g. ir Gydgifagovyfed - ar f. sygMstgifads (righds of Gydsysofyfyd gired - 3 sygvyffundgin dann y ben Ryddin dann gyndd from a'r gydd ar ar ar gyddiani fran Gyddian ferthau ferthau y ferthau y ferthau fert

KgGo

bBAf=fbrD ryf3Lftg-3tyrv

^f=f, drPHgPcafrPFBD-cyg. fl13Dfw.mmcs&svs&ygf.gygRy&vFsyf3tfsr3ngfydgf@rmg#3Lftg-3tyw



:sg h3tHBt.gt

iengvy :t3zgRy

o Yf3Lf4 o EM1104F0a o ENI "ABNMEN, VbřEVA, QfW ENI EW o 5100j 4fVbXEA, f. VAKÍGVWfh BAKWÍfAEXV, i QfBI fEM1104104fVNu fEM11041F1

Analytical Results

W¢r@ls¢tn: WATER		Ö	Client sample ID	GW1	GW35	GW8	GW38	GW37	
	Clie	ent sampli	Client sampling date / time	1a@: A@011f1T000	1a@: A@011f1Tw0	18@: A@011f1T00	18@: A@011f1T00	18@: A@011f1T00	
Compound	CAS Number	LOR	Unit	EM1104608-001	EM1104608-002	EM1104608-003	EM1104608-004	EM1104608-005	
EP070: Total Petroleum Hydrocarbons - Speciation	iation								
Aromatic C10-C14		T0	QI %			01>	480	300	
Aromatic C15-C28		100	QI %			<100	200	<100	
Aromatic C29-C36		10	QI %			OL>	<t0< th=""><th><t0< th=""><th></th></t0<></th></t0<>	<t0< th=""><th></th></t0<>	
Aliphatic C10-C14		2	QI %			OL>	<t0< th=""><th><t0< th=""><th></th></t0<></th></t0<>	<t0< th=""><th></th></t0<>	
Aliphatic C15-C28		100	QI %			<100	<100	<100	
Aliphatic C29-C36		T0	QI %			<t0< th=""><th><t0< th=""><th><t0< th=""><th></th></t0<></th></t0<></th></t0<>	<t0< th=""><th><t0< th=""><th></th></t0<></th></t0<>	<t0< th=""><th></th></t0<>	
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup	ilica gel clea	dnut							
C10 - C14 Fraction		T0	QI %	<100	<100	160	1090	410	
C15 - C28 Fraction		100	QI %	<500	<500	<100	210	120	
C29 - C36 Fraction		2	QI %	<100	<100	01>	<t0< td=""><td><t0< td=""><td></td></t0<></td></t0<>	<t0< td=""><td></td></t0<>	
^ C10 - C36 Fraction (sum)		T0	% I/O	<100	<100	160	1300	530	
EP071 SG: Total Recoverable Hydrocarbons (NEPM 2010 draft) - Silica gel cleanup	(NEPM 2010	draft) - S	ilica gel cleanu	Q.					
>C10 - C16 Fraction		100	QI %	<500	<200	200	1090	440	
>C16 - C34 Fraction		100	QI %	<500	<500	<100	170	<100	
>C34 - C40 Fraction		100	9 1%	<500	<200	<100	<100	<100	
^ >C10 - C40 Fraction (sum)		100	% kp	<500	<500	200	1260	440	
EP070S:TPH Surrogates - Speciation									
2-Fluorobiphenyl	Y51600	00	ı.			95.4	96.3	97.1	
2-Bromonaphthalene	Ta0@Y@	00	ı			92.2	84.0	87.2	





:sg h3tHBt.gt

iengvy :t3zgRy

o 4f3lf4 o EM1104F0a o ENI JABNMEN, VbřEVA, QŕW ENI EW o 5100j 4fVbXEA, f: VAKfGVMfh BAKWffAEXV, i QŕBI fEM1104104fVNu fEM11041F1

Surrogate Control Limits

Wor @sytrx: WATER		Recovery Limits (%)	Limits (%)
Compound	CAS Number	Low	High
EP070S:TPH Surrogates - Speciation			
2-Fluorobiphenyl	Y51600	T5	144
2-Bromonaphthalene	Ta0@Y@	a1	14T

Hi Carol – can I get some further analysis on the following. Work order EM1104104:

- osample 001 (GW1) TPH silica gel clean up; and (use original extract and raise LOR)
- sample 005 (GW35) TPH silica gel clean up. (use original extract and raise LOR)

Work order EM11004161:

- 3 sample 003 (GW8) TPH silica gel clean up and TPH speciation (Aliphatic/Aromatic); (use 500mL amber bottle supplied even though holding time has expired)
- sample 006 (GW38) TPH silica gel clean up and TPH speciation (Aliphatic/Aromatic); and (as above)
- sample 010 (GW37) TPH silica gel clean up and TPH speciation (Aliphatic/Aromatic). (as above)

Cheers, Dave

Regards

How was your customer experience? Please send us your feedback

Carol Walsh Senior Client Services Officer

ALS | Environmental (General Environmental Group)

Address 4 Westall Rd, Springvale, VIC, 3171 PHONE +61 3 8549 9600 FAX +61 3 8549 9601 www.alsglobal.com

A Please consider the environment before printing this email.

Environmental Division Melbourne

EM1104608



Telephone : +61-3-8549 9600

MO-349

From: David James [mailto:djames@environmentalearthsciences.com]

Sent: Wednesday, 4 May 2011 3:09 PM

To: Carol Walsh

Subject: RE: 210074 - Further analysis work order EM1104104 and EM1104161

Hi Carol – please go ahead with samples in EM1104104 of performing silica gel clean up from the original extract and raise LOR x 2.

And, EM1104161 –perform silica gel clean up and TPH Speciation from the 500mL bottle even though outside of holding time.

Thanks, Dave

ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES



Environmental Division

QUALITY CONTROL REPORT

Work Order	: EM1104608	Page	:10f5
Client	: ENVIRONMENTAL EARTH SCIENCES	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID JAMES	Contact	: Carol Walsh
Address	: P.O.BOX 2253	Address	: 4 Westall Rd Springvale VIC Australia 3171
	FOOTSCRAY VIC, AUSTRALIA 3011		
E-mail	: djames@eesi.biz	E-mail	: carol.walsh@alsenviro.com
Telephone	: +61 96871666	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 96871844	Facsimile	: +61-3-8549 9601
Project	: 210074 ALBERT PARK GAS WORKS REBATCH OF	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	EM1104104 AND EM1104161		
Site	1.		
C-O-C number		Date Samples Received	: 04-MAY-2011
Sampler		Issue Date	: 13-MAY-2011
Order number			
		No. of samples received	.5
Quote number	: ME/015/11 V3	No. of samples analysed	57

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

This Quality Control Report contains the following information:

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



NATA Accredited Laboratory 825

accreditation requirements. This document is issued in accordance with NATA

Nancy Wang

	has been		
	signing		
	Electronic		regory
	below.		Accreditation Category
	indicated		Accred
	signatories		
	authorized	art 11.	
	the	SFR F	
	i by	n 21 (u
	signec	ecified in	Position
	been electronically signed by the authorized signatories indicated below. Electronic signing has	liance with procedures specified in 21 CFR Part 11.	
	peen	e with	
	has	plianc	
Signatories	his document	sarried out in compl	ories
Sign	This	carrie	Signatories

Senior Semivolatile Instrument Chemist

Melbourne Organics



Accredited for compliance with

ISO/IEC 17025.



: ENVIRONMENTAL EARTH SCIENCES EM1104608 Work Order Project Client

210074 ALBERT PARK GAS WORKS REBATCH OF EM1104104 AND EM1104161

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 insuffient 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.

Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot Key:

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

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC



3 of 5 EM1104608 Work Order Project Client

: ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS REBATCH OF EM1104104 AND EM1104161

Laboratory Duplicate (DUP) Report

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

No Laboratory Duplicate (DUP) Results are required to be reported.



: ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS REBATCH OF EM1104104 AND EM1104161 EM1104608 Project Client

Work Order

g et%Mhland (g h) anMLaboratory Control: pide (LC:) Report

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 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 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.

g et%Mh land (g h)

Laboratory Control: pide (LC:) Report

Sub-Matrix: WATER

Cap Man X								
				Report	: pide	: pide RecoSery (v)	RecoSery	RecoSery Limits (v)
q et%oMwCompounM	CA: Number	LOR	Unit	Result	Concentration	; 77	НОТ	Bik%
EP070: Total Petroleum Hydrocarbons - Speciation (QCLot: 1774523)	ot: 1774523)							
EP070: Aliphatic C10-C14	-	20	hg/L	<50	5400 µg/L	110	53	123
EP070: Aliphatic C15-C28	-	100	hg/L	<100	17280 µg/L	72.5	59	130
EP070: Aliphatic C29-C36	-	20	hg/L	<50	1	1	1	1
EP070: Aromatic C10-C14	1	20	hg/L	<50	2310 µg/L	85.9	56	130
EP070: Aromatic C15-C28	1	100	hg/L	<100	3750 µg/L	104	20	130
EP070: Aromatic C29-C36	-	50	hg/L	<50	-		-	
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 1774524)	anup (QCLot: 17	774524)						
EP071-HXSG: C10 - C14 Fraction	1	20	hg/L	<50	8540 µg/L	103	20	130
EP071-HXSG: C15 - C28 Fraction	-	100	hg/L	<100	20300 µg/L	81.8	70	130
EP071-HXSG: C29 - C36 Fraction	-	20	hg/L	<50	-		-	
EP071-HXSG: C10 - C36 Fraction (sum)		20	hg/L	<50	-	-	-	-
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 1774552)	anup (QCLot: 17	774552)						
EP071-HXSG: C10 - C14 Fraction		20	hg/L	<50	-		-	
EP071-HXSG: C15 - C28 Fraction	1	100	hg/L	<100	1	-	-	-
EP071-HXSG: C29 - C36 Fraction		20	hg/L	<50				
EP071-HXSG: C10 - C36 Fraction (sum)		50	µg/L	<50				



: 5 of 5 : EM1104608 : ENVIRONMENTAL EARTH SCIENCES : 210074 ALBERT PARK GAS WORKS REBATCH OF EM1104104 AND EM1104161 Work Order Project Client

g atrix: pide (g:) Report

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

No Matrix Spike (MS) Results are required to be reported.



ANALYTICAL CHEMISTRY & TESTING SERVICES



Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

:1 of 5	: Environmental Division Melbourne : Carol Walsh : 4 Westall Rd Springvale VIC Australia 3171		: carol.walsh@alsenviro.com	: +61-3-8549 9608	: +61-3-8549 9601	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement		: 04-MAY-2011	: 13-MAY-2011		5	d :5
Page	Laboratory Contact Address	:	E-mail	Telephone	Facsimile	QC Level		Date Samples Received	Issue Date		No. of samples received	No. of samples analysed
: EM1104608	: ENVIRONMENTAL EARTH SCIENCES : MR DAVID JAMES : P.O.BOX 2253	FOOTSCRAY VIC, AUSTRALIA 3011	: djames@eesi.biz	: +61 96871666	: +61 03 96871844	: 210074 ALBERT PARK GAS WORKS REBATCH OF EM1104104 AND EM1104161	:					: ME/015/11 V3
Work Order	Client Contact Address	:	E-mail	Telephone	Facsimile	Project	Site	C-O-C number	Sampler	Order number		Quote number

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

Environmental Division Melbourne Part of the ALS Laboratory Group

4 Westall Rd Springvale VIC Australia 3171 Tel. +61-3-8549 9600 Fax. +61-3-8549 9601 www.alsglobal.com

A Campbell Brothers Limited Company



210074 ALBERT PARK GAS WORKS REBATCH OF EM1104104 AND EM1104161 : ENVIRONMENTAL EARTH SCIENCES Work Order Project Client



Analysis Holding Time Compliance

extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the 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 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 Summary of Outliers.

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

Matrix: WATER

Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Date extracted Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP070: Total Petroleum Hydrocarbons - Speciation								
Amber Glass Bottle - Unpreserved GW8, GW37	GW38,	19-APR-2011	05-MAY-2011	26-APR-2011	×	08-MAY-2011	14-JUN-2011	>
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup	leanup							
Amber Glass Bottle - Unpreserved GW1,	GW35	18-APR-2011	21-APR-2011	25-APR-2011	>	06-MAY-2011	14-JUN-2011	>
Amber Glass Bottle - Unpreserved GW8, GW87	GW38,	19-APR-2011	05-MAY-2011	26-APR-2011	¥	08-MAY-2011	14-JUN-2011	>
EP071 SG: Total Recoverable Hydrocarbons (NEPM 2010 draft) - Silica gel cleanup	10 draft) - Silica gel cleanup							
Amber Glass Bottle - Unpreserved GW1,	GW35	18-APR-2011	21-APR-2011	25-APR-2011	>	06-MAY-2011	14-JUN-2011	>
Amber Glass Bottle - Unpreserved GW8, GW37	GW38,	19-APR-2011	05-MAY-2011	26-APR-2011	¥	08-MAY-2011	14-JUN-2011	>



: ENVIRONMENTAL EARTH SCIENCES : 3 of 5 : EM1104608 Work Order Project Client

: 210074 ALBERT PARK GAS WORKS REBATCH OF EM1104104 AND EM1104161

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: $\mathbf{x} = \text{Quality Control frequency not within specification}$. $\mathbf{x} = \text{Quality Control frequency within specification}$

	Count		Rate (%)		Quality Control Specification
QC	Regular	Actual	Expected	Evaluation	
EP071-HXSG 1	3	33.3	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
EP070 1	4	25.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
EP071-HXSG 2	2	40.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
EP070 1	4	25.0	5.0	`	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
			Regular 3 3 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Regular Actual 3 33.3 4 25.0 5 40.0 6 4 25.0	Regular Actual Expected



: ENVIRONMENTAL EARTH SCIENCES : EM1104608 Work Order Project Client

210074 ALBERT PARK GAS WORKS REBATCH OF EM1104104 AND EM1104161

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
TPH - Speciation	EP070	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)
Total Petroleum Hydrocarbons after Silica Gel Clean Up	EP071-HXSG	WATER	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID, following silica gel clean up, and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14-HX	WATER	Variation of USEPA SW 846 - 3510B: 500 mL to 0.5L of sample is transferred to a separatory funnel and serially extracted three times using 30mL DCM for each extract. The resultant extracts are combined, dehydrated, and exchanged into 5 mL of hexane for analysis. ALS default excludes sediment which may be resident in the container.

EM1104608 Work Order

: ENVIRONMENTAL EARTH SCIENCES Project Client

210074 ALBERT PARK GAS WORKS REBATCH OF EM1104104 AND EM1104161



Outliers: Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike 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		Extraction / Preparation			Analysis	
Container / Client Sample ID(s)	Date extracte	Date extracted Due for extraction	Days	Date analysed	Due for analysis	Days
EP070: Total Petroleum Hydrocarbons - Speciation						
Amber Glass Bottle - Unpreserved GW8, GW37	05-MAY-201	05-MAY-2011 26-APR-2011	ത	-	I	
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup						
Amber Glass Bottle - Unpreserved GW38, GW37	05-MAY-201	05-MAY-2011 26-APR-2011	ത	-	I	-
EP071 SG: Total Recoverable Hydrocarbons (NEPM 2010 draft) - Silica gel cleanup						
Amber Glass Bottle - Unpreserved GW38, GW37	05-MAY-201	05-MAY-2011 26-APR-2011	ത			-

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.



ANALYTICAL CHEMISTRY & TESTING SERVICES



Environmental Division

	CERTIFICA	CERTIFICATE OF ANALYSIS	
Work Order	: EM1104729	e0:	f 13.13s
v PPICI	f ENVIRONMENTAL EARTH SCIENCES	t eyL@iL@	fEDunCaDc: Die Rangnind D3M: PyLAC).
v LDieVi	↑MI RJSWRJJMEd	v LDieVi	fve CB eBO
J BBC gg	f X2 X5 Z T3BaY,	J BBC gg	f 43 : giel Pablj Orbouel? SSW/3/Agioe Man 3,1F1
	s22UdvIJp3SW721-dUIJtW3011		
E@erm	f Basc:gw::gnay/m	E@erR	f VeCLPS ePJOW ePJ: DunCLXALc
U: P.j Q.D.	f 9r 13 r 8F1r r r	U: Pj QLD:	f 9r 1@@Y4l 3 r 08
s eVgran rifi	f 9r 130, 3 r 8F1844	s eVgran rifi	f 9r 1@@Y4l 3 r 01
C.z Vi	fa100F431t5EIU3 JIK33Jd3 21Kd38E5JUvQ28s3	Nv3:u:P	f(EMSHIISSIVOBAPSE), OBEDB31td3Nvd, 3C/AMGc:Di
	EM1104a8r		
2 CB: CEDAc y: C	f (COM)		
v @@3DAc y: C	f (COM)	Rei: 3dec j P.g3l: V:no:B	f 0r @UJp @011
dec j P.C	f (Company)	WgA: Rei:	f 11 @J p @011
drin	f (COM)		
		(LXLb3gecjPg3CV:no:B	f1,
NALI: DAc y: C	f MEI01YK1136,	(LXLbbgecjPg3eDeMg:B	f 1,

CPeg: 🕉

UOg3/: Crimidei: 3.tsi Delingrig3/LDienng3O. 31.RE6nno3ndLC eintDi

- G: D: @ FBV Lc c: Dig
 - J De Phinher B : gAPg
- dACCLOei: 3/LDiCLE raning

(JW3WCBinB3eyL@iL@38aY

UOrg 38LVAc : Di3rg 3rg A: B3 183

eWC BrineintbD3C / And c: DigX eVALOBEDV: 36 mico (JUU 3

UOTOS BLVAC: DIS CEGS y:: DS: P.V.C.DYVEITHS GNOD, BS yn3 iQ. 3 eAICLON: BS gnaDeiLOngs nabyvei: BS y: R6X6 EPVIC.DYV3 gnaDhao3 Ceg3 y:: D Signatories

Accreditation Category VecConB3_Ai3r03A_c j Red DV. 36 nin03 (L.V.: BAC g3gj : Vitom B3160a13v s l 3 e C311X Position Signatories M: PyLACD: 32 GeD746g

d: D1bC2d: c not Reinfa 340gi CAc : Di3v O. c ngi

J WC Brin B3LC3ALc j RedDV: 35 in 03 W/2 N/Ev 31 F0a YX

(eDVn3 eDo

WORLD RECOGNISED ACCREDITATION

Environmental Division Melbourne Part of the ALS Laboratory Group

43 : gier Bajj ആouer கூல்ப் Agic has 1F1 Tel. +61-3-8549 9600 கல் 20 1 இண்டி 3 r 01 3 www.alsglobal.com

A Campbell Brothers Limited Company

f a100F431t5EI U3 JI K33Jd3 21 Kd38 E5JUv Q2°s €M1104a8r



General Comments

Cz V

B: u: Pcj: Bcj @ V: BAC gos C 3 c j Pcn: Bobboto 3 c yg: DV: 3. 1698 VAc : Di: Bogie DBe @ gos Coyno 3. Am Di 32 / A: giX

- . O.C. & LigiAC f B. i. G. meindf CCOEgg:: f Dg:CLC:BXC gARGEC f X j LC. f B.LCE f BOCS: in f CCS
- OCSSCILC BR933CED3<05 GARBOOM GOODO 321 7000 en3/: 343 0m e030ecj P3 xi@VIBon: giel: 34MinDeDRLODQAMD3ecj P31.0eDRgoox
- OC30311 3.08 EVENCE BECOMPENDE GRACE SPENDE GRACE SPENDE BENGE BEN
- . O Digec j Modan: 3014. © eintogonig Quins: ByndO 34m Digec j Monderigec j Monderigec j Monderigec j Monderigec j Monderigen j Monderi
 - vJd3 Acy: G=3JdScorgioGDAcy: GACc Beieyeg: 3: endiendi B3n3 Och MeBlygioRVg3: GMC gALO3 Och ReBlygioRVg3: GMC galoga: GMC geiby GALO3 och ReBlYMinX t213=3 na mi3Lb3CjLGmBo K: n3
- ^3-3JOg3C gAR3g3/LcjA: B31Cc 37BranBAerB-DeRi: 33: i: Vinbogaei3.CByLu: 3O. 3P. u: RL13CjL0nBo
- EP071-HXSG: Samples EM1104729-002,010 have LOR raised due to low sample volume.



a0@ | @01131Yf00 EM1104729-005

4100 470 670 670 670 670

470 °Y0

<100 **140** <100

99.7

83.7

102

100

91.3

ュュ

8 8

, a1@0@ Y80@, @

EP070S:TPH Surrogates - Speciation

2-Fluorobiphenyl 2-Bromonaphthalene

140

\$ **4** \$ **4** \$ **4**

GW15

f EM1104Fal f E(SW2(ME(UUt ŒJIUQ33vWE(v Ed f a100F431t5EIU3JIK33Jd32IKd33E5JUvQ2SsŒM1104a8r

eo: . LOPIZ (B: C

Cz V v Padi

Analytical Results

d Ay@deiOn: WATER		Clie	Client sample ID	GW3	GW4	GW10	GW11
	Client	ent samplii	sampling date / time	a0@ @01131Yf00	a0@ 1 @0113Yf00	a0@ 1 @01131Yf00	a0@ 1 @01131 Yf00
Compound	CAS Number	LOR	Unit	EM1104729-001	EM1104729-002	EM1104729-003	EM1104729-004
EP070: Total Petroleum Hydrocarbons - Speciation	s - Speciation						
Aromatic C10-C14		λ0	%0K	<y0< td=""><td></td><td>0,</td><td>0,k></td></y0<>		0,	0,k>
Aromatic C15-C28		100	%ok	<100		<100	<100
Aromatic C29-C36		γ.	%0K	<y0< td=""><td></td><td>O,></td><td>0,k></td></y0<>		O,>	0,k>
Aliphatic C10-C14		γ.	%0K	cY0		0,	0,k>
Aliphatic C15-C28		100	%ok	<100		<100	<100
Aliphatic C29-C36		λ0	%ok	<y0< td=""><td></td><td>OX></td><td><y0< td=""></y0<></td></y0<>		OX>	<y0< td=""></y0<>
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanu	oons - Silica gel clea	dnu					
C10 - C14 Fraction		λ0	%ok	70	<ay0< td=""><td>0\/></td><td>٥,١</td></ay0<>	0\/>	٥, ١
C15 - C28 Fraction		100	%ok	<100	<y00< td=""><td><100</td><td><100</td></y00<>	<100	<100
C29 - C36 Fraction		λ0	%ok	<y0< td=""><td>350</td><td>OX></td><td><y0< td=""></y0<></td></y0<>	350	OX>	<y0< td=""></y0<>
^ C10 - C36 Fraction (sum)		λ0	%ok	70	350	0,	0,k>
EP071 SG: Total Recoverable Hydrocarbons (NEPM 2010 draft) - Silica gel cleanup	arbons (NEPM 2010	draft) - S	ilica gel cleanu	dr			
>C10 - C16 Fraction		100	%ok	130	<y00< td=""><td><100</td><td><100</td></y00<>	<100	<100
>C16 - C34 Fraction		100	%ok	<100	<y00< td=""><td><100</td><td><100</td></y00<>	<100	<100
>C34 - C40 Fraction		100	%0K	<100	<\000	<100	<100
^ >C10 - C40 Fraction (sum)		100	%ok	130	<y00< td=""><td><100</td><td><100</td></y00<>	<100	<100



f 43LBP f EM1104Fal f E(SW2(ME(UUt ŒJIUQ33vWE(v Ed f a100F431t5EIU3JIK33Jd32IKd38 E5JUvQ2sÆM1104a8r

eo: . LGB B: C

Cz V

Analytical Results

d Ay@lei Con: WATER		Clie	Client sample ID	GW24	GW25	GW27	GW39	GW42D
	Clie	nt samplin	Client sampling date / time	a0@ @01131Yf00	a0@ @01131Yf00	a0@ 1 @01131Yf00	a0@ 1 @01131Yf00	a1@ 1@01131Yf00
Compound	CAS Number	LOR	Unit	EM1104729-006	EM1104729-007	EM1104729-008	EM1104729-009	EM1104729-010
EP070: Total Petroleum Hydrocarbons - Speciation	Speciation							
Aromatic C10-C14		λ0	%0₩	12100	<y0< th=""><th>O.\></th><th>cY0</th><th></th></y0<>	O.\>	cY0	
Aromatic C15-C28		100	%0K	300	<100	<100	<100	
Aromatic C29-C36		λ0	%0K	<y0< th=""><th><y0< th=""><th>O.\></th><th><y0< th=""><th></th></y0<></th></y0<></th></y0<>	<y0< th=""><th>O.\></th><th><y0< th=""><th></th></y0<></th></y0<>	O.\>	<y0< th=""><th></th></y0<>	
Aliphatic C10-C14		ο,	%o\t	cY0	<y0< th=""><th>0\x</th><th>cY0</th><th></th></y0<>	0\x	cY0	
Aliphatic C15-C28		100	%ok	<100	<100	<100	<100	
Aliphatic C29-C36		λ0	%0K	<y0< th=""><th><y0< th=""><th>O.\></th><th><y0< th=""><th></th></y0<></th></y0<></th></y0<>	<y0< th=""><th>O.\></th><th><y0< th=""><th></th></y0<></th></y0<>	O.\>	<y0< th=""><th></th></y0<>	
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup	ıs - Silica gel clea	dnu						
C10 - C14 Fraction		ο,	%0\t	12300	<y0< th=""><th>O,></th><th>170</th><th><ay0< th=""></ay0<></th></y0<>	O,>	170	<ay0< th=""></ay0<>
C15 - C28 Fraction		100	%ok	550	<100	<100	<100	<y00< th=""></y00<>
C29 - C36 Fraction		Q,	%o\t	<y0< th=""><th><y0< th=""><th>0\x</th><th>cY0</th><th><ay0< th=""></ay0<></th></y0<></th></y0<>	<y0< th=""><th>0\x</th><th>cY0</th><th><ay0< th=""></ay0<></th></y0<>	0\x	cY0	<ay0< th=""></ay0<>
^ C10 - C36 Fraction (sum)		ο,	%o\t	12800	<y0< th=""><th>0\x</th><th>170</th><th><ay0< th=""></ay0<></th></y0<>	0\x	170	<ay0< th=""></ay0<>
EP071 SG: Total Recoverable Hydrocarbons (NEPM 2010 draft) - Silica gel cleanup	ons (NEPM 2010	draft) - Si	ilica gel cleanu	dn				
>C10 - C16 Fraction		100	%ok	10100	<100	<100	230	<\000
>C16 - C34 Fraction		100	%o\t	260	<100	<100	<100	<y00< th=""></y00<>
>C34 - C40 Fraction		100	%o\t	<100	<100	<100	<100	<y00< th=""></y00<>
^ >C10 - C40 Fraction (sum)		100	%ok	10400	<100	<100	230	<y00< th=""></y00<>
EP070S:TPH Surrogates - Speciation								
2-Fluorobiphenyl	, a1@0@	X _O	ュ	102	93.2	6.96	96.3	
2-Bromonaphthalene	Y80@, @	X _O	n	98.9	87.4	88.7	99.5	



f Y3LBs f EM1104Fal f E(SW2 (ME(UUt 歪JIUQ3dvWE(v Ed f a100F43Ut5EIU3JIK3SJd32IKd38E5JUvQ2SsŒM1104a8r

eo: . LOMO (B: C

Cz V v PhDi

Analytical Results

•								
d Ay@deica: WATER		Clie	Client sample ID	GW43D	GW44D	GW19		
	Cli	ent samplii	Client sampling date / time	a0@ @01131Yf00	a0@ 1 @01131Yf00	a0@ 1 @01131Yf00	(000)	
Compound	CAS Number	LOR	Unit	EM1104729-011	EM1104729-012	EM1104729-013		
EP070: Total Petroleum Hydrocarbons - Speciation	ation							
Aromatic C10-C14		λ0	%ok	<y0< th=""><th>26500</th><th>O.\></th><th></th><th></th></y0<>	26500	O.\>		
Aromatic C15-C28		100	%0K	<100	800	<100		
Aromatic C29-C36		Q,	%ok	<y0< th=""><th><y0< th=""><th>٥,٨٥</th><th></th><th></th></y0<></th></y0<>	<y0< th=""><th>٥,٨٥</th><th></th><th></th></y0<>	٥,٨٥		
Aliphatic C10-C14		Q,	%0K	<y0< th=""><th>cY0</th><th>٥,٨٥</th><th></th><th></th></y0<>	cY0	٥,٨٥		
Aliphatic C15-C28		100	%0¥	<100	<100	<100		
Aliphatic C29-C36		λ0	%ok	<y0< th=""><th><y0< th=""><th><y0< th=""><th></th><th></th></y0<></th></y0<></th></y0<>	<y0< th=""><th><y0< th=""><th></th><th></th></y0<></th></y0<>	<y0< th=""><th></th><th></th></y0<>		
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup	ica gel clea	dnu						
C10 - C14 Fraction		λ0	%0K	<y0< th=""><th>26600</th><th>O.\></th><th></th><th></th></y0<>	26600	O.\>		
C15 - C28 Fraction		100	%ok	<100	1180	<100		
C29 - C36 Fraction		λ0	%ok	<y0< th=""><th><y0< th=""><th><y0< th=""><th></th><th></th></y0<></th></y0<></th></y0<>	<y0< th=""><th><y0< th=""><th></th><th></th></y0<></th></y0<>	<y0< th=""><th></th><th></th></y0<>		
^ C10 - C36 Fraction (sum)		λO	%ok	<y0< th=""><th>57800</th><th><٧٥</th><th></th><th></th></y0<>	57800	<٧٥		
EP071 SG: Total Recoverable Hydrocarbons (NEPM 2010 draft) - Silica gel cleanup	IEPM 2010	draft) - S	ilica gel cleanu	Q.				
>C10 - C16 Fraction		100	%ok	<100	45300	<100		
>C16 - C34 Fraction		100	%k	<100	200	<100		
>C34 - C40 Fraction		100	%k	<100	<100	<100		
^ >C10 - C40 Fraction (sum)		100	%ok	<100	45800	<100		
EP070S:TPH Surrogates - Speciation								
2-Fluorobiphenyl	, a1@0@8	X _O	ı,	102	101	9.66		
2-Bromonaphthalene	Y80@, @	80	ュ	89.6	102	84.5		



v ₽nD f E(SW2 (ME(UU f Æ. Cz V f a100F43Jt5EI U3 JI

eo: . LOMO (B: C

fr组路 fEM1104Fal fE(SW2(ME(UUt毛JIUQ函v证(vEd fa100F4到t5EIU3JIK33Jd32IKd38E5JUvQ忽s歪M1104a8r

Surrogate Control Limits

d Ay @ ei On: WATER		Recovery	Recovery Limits (%)
Compound	CAS Number	Гом	High
EP070S:TPH Surrogates - Speciation			
2-Fluorobiphenyl	, a1@0@	Ya	144
2-Bromonaphthalene	Y80@, @	81	1, ×

Peter Raylic

From:

Carol Walsh

Sent:

Friday, 6 May 2011 12:19 PM

To:

Danielle White; Emily Sabatka; Megan Perrett; Peter Ravlic; Rosalinda Laria; Sarah Cordell

Cc:

Herman Lin

Subject:

FW: 210074 - Work order EM1104286 further analysis

Importance: High

Peter

Please rebatch samples from EM1104286 for TPH Silica gel and TPH speciation – see request below from David James.

Trays: MO311 & 315-8

There should be 500mL amber bottles supplied for these samples.

Client is aware holding times have expired.

Regards

How was your customer experience? Please send us your feedback

Carol Walsh Senior Client Services Officer

ALS | Environmental (General Environmental Group)

Address 4 Westall Rd, Springvale, VIC, 3171 PHONE +61 3 8549 9600 FAX +61 3 8549 9601 www.alsglobal.com

A Please consider the environment before printing this email.

Environmental Division
Melbourne
Work Order
EM1104729



Telephone: +61-3-8549 960

From: David James [mailto:djames@environmentalearthsciences.com]

Sent: Friday, 6 May 2011 11:39 AM

To: Carol Walsh Cc: Sylvia Tari

Subject: 210074 - Work order EM1104286 further analysis

Hi Carol – as per our conversation, can I get some further analysis on the following.

Work order EM1104286:

- sample 001 (GW3) TPH silica gel clean up and TPH speciation (Aliphatic/Aromatic);
- 2 sample 002 (GW4) TPH silica gel clean up and TPH speciation;
- 3 sample 004 (GW10) TPH silica gel clean up and TPH speciation;
- 4 sample 005 (GW11) TPH silica gel clean up and TPH speciation;
- 5 sample 009 (GW15) TPH silica gel clean up and TPH speciation;
- sample 014 (GW24) TPH silica gel clean up and TPH speciation;
- 7+ sample 015 (GW25) TPH silica gel clean up and TPH speciation;
- sample 016 (GW27) TPH silica gel clean up and TPH speciation;
- sample 018 (GW39) TPH silica gel clean up and TPH speciation;

20/4/11

Mo-3 369 to 370

sample 021 (GW42) TPH silica gel clean up and TPH speciation;

sample 022 (GW43) TPH silica gel clean up and TPH speciation;

1Z sample 023 (GW44) TPH silica gel clean up and TPH speciation;

13 sample 034 (GW19) TPH silica gel clean up and TPH speciation;

20/4/11

Thanks,

x cid:image001.gif@01CB491F.D3B32C

David James – Environmental Engineer

PO Box 2253, Footscray, VIC 3011.

p: 03 9687 1666

d: 03 8398 4419

m: 0437 033 796

f: 03 9687 1844

djames@eesi.biz

www.environmentalearthsciences.com

NOTICE: This e-mail transmission (including any attached files) contains privileged and confidential information and is intended only for the use of the addressee(s) named. If you are not the intended recipient of this message you are hereby notified that you must not disseminate, copy or take any action in reliance on the information contained herein. If you have received this message in error please notify the sender immediately by return e-mail and delete it

ALS Group: Click here to report this email as spam.

ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES



Environmental Division

QUALITY CONTROL REPORT

Work Order	: EM1104729	Page	:10f5
Client	: ENVIRONMENTAL EARTH SCIENCES	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID JAMES	Contact	: Carol Walsh
Address	: P.O.BOX 2253	Address	: 4 Westall Rd Springvale VIC Australia 3171
	FOOTSCRAY VIC, AUSTRALIA 3011		
E-mail	: djames@eesi.biz	E-mail	: carol.walsh@alsenviro.com
Telephone	: +61 96871666	Telephone	: +61-3-8549 9608
Facsimile	: +61 03 96871844	Facsimile	: +61-3-8549 9601
Project	: 210074 ALBERT PARK GAS WORKS REBATCH OF EM1104286	NC Level	: QEPM 1999 Schedule B(3) and ALS NCS3 requirement
Site			
C-O-C number	!.	Date Samples Received	: 06-MAY-2011
Sampler		Issue Date	: 19-MAY-2011
Order number			
		Qo. of samples received	: 13
Nuote number	: ME/015/11 V3	Qo. of samples analysed	. 13

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

This Nuality Control Report contains the following information:

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



QATA Accredited Laboratory 825

accreditation requirements. This document is issued in accordance with QATA

Qancy Wang

Signatories

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

Melbourne Organics

Senior Semivolatile Instrument Chemist

Accredited for compliance with

ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION



EQVIROQMEQTAL EARTH SCIEQCES EM1104729 Work Order Project Client

210074 ALBERT PARK GAS WORKS REBATCH OF EM1104286

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 QEPM. 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 insuffient 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.

Anonymous = Refers to samples which are not specifically part of this work order but formed part of the NC process lot Key:

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

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed NC



EM1104729 Work Order Project Client

: 3 of 5

: EQVIROQMEQTAL EARTH SCIEQCES : 210074 ALBERT PARK GAS WORKS REBATCH OF EM1104286

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 NWI-EQ/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:-Qo Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

No Laboratory Duplicate (DUP) Results are required to be reported.



EQVIROQMEQTAL EARTH SCIEQCES EM1104729 Work Order Project Client

210074 ALBERT PARK GAS WORKS REBATCH OF EM1104286

g et‰MhIand (g h) anMLaboratory Control : pide (LC:) Report

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 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 NC analytes. The purpose of this NC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

g et%oMh land (g h)

Laboratory Control: pide (LC:) Report

Sub-Matrix: WATER

			Report	: pide	: pide RecoSery (v)	RecoSery	RecoSery Limits (v)
g et%oMwCompounM CA: Number	nber LOR	Unit	Result	Concentration	; 7 7:	НоЛ	Bik%
EP070: Total Petroleum Hydrocarbons - Speciation (QCLot: 1779302)	(;						
EP070: Aliphatic C10-C14	20	hg/L	<50	5400 µg/L	103	53	123
EP070: Aliphatic C15-C28	100	hg/L	<100	17280 µg/L	69.1	59	130
EP070: Aliphatic C29-C36	20	hg/L	<50	-	1	1	1
EP070: Aromatic C10-C14		hg/L	<50	2310 µg/L	79.5	56	130
EP070: Aromatic C15-C28	100	hg/L	<100	3750 µg/L	87.3	70	130
EP070: Aromatic C29-C36	20	hg/L	<50		-	-	-
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 1779303)	ot: 1779303)						
EP071-HXSG: C10 - C14 Fraction	20	hg/L	<50	8540 µg/L	111	70	130
EP071-HXSG: C15 - C28 Fraction	100	hg/L	<100	20300 µg/L	81.0	70	130
EP071-HXSG: C29 - C36 Fraction		hg/L	<50		-		-
EP071-HXSG: C10 - C36 Fraction (sum)		hg/L	<50		-		



: EQVIROQMEQTAL EARTH SCIEQCES : 210074 ALBERT PARK GAS WORKS REBATCH OF EM1104286 : 5 of 5 : EM1104729 Work Order Project Client

g atrix: pide (g:) 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 NC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Nuality Objectives (DNOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

No Matrix Spike (MS) Results are required to be reported.



ANALYTICAL CHEMISTRY & TESTING SERVICES



Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	:EM1104729	Page	:10f5
Client	: ENVIRONMENTAL EARTH SCIENCES	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID JAMES	Contact	: Carol Walsh
Address	: P.O.BOX 223F	Address	: p Westall Rd S7ringvale VIC Australia F1-1
	YOOTSCRA, VICUA0STRALIA F411		
Ejmail	: d@mesz_eesi.biw	Ejmail	: carol.+alshz alsenviro.com
Tele7hone	: 651 958- 1555	Tele7hone	: 651j Fj83p9 9548
Yacsimile	: 651 4F 958-18pp	Yacsimile	: 651jFj83p9 9541
Pro@ct	: 2144-p ALBERT PARK GAS WORKS REBATCH OY EM114p285	QC Level	: NEPM 1999 Schedule B(F) and ALS QCSF requirement
Site			
CjOjC number		Date Sam7les Received	: 45jMA, j2411
Sam7ler		Issue Date	: 19jMA, j2411
Order number			
		No. of sam7les received	
Quote number	: ME/413/11 VF	No. of sam7les analysed	∴1F

This re7ort su7ersedes any 7 revious re7ort(s) + ith this reference. Results a77ly to the sam7le(s) as submitted. All 7ages of this re7ort have been checked and a77roved for release.

This Inter7retive Quality Control Re7ort contains the follo+ing information:

- Analysis Holding Time Com7liance
- Quality Control Parameter Yrequency Com7liance
- Brief Method Summaries
- Summary of Outliers

Environmental Division Melbourne Part of the ALS Laboratory Group

p Westall Rd S7ringvale VIC Australia F1-1 Tel. +61-3-8549 9600 Yax. 651jFj83p9 9541 www.alsglobal.com

A Campbell Brothers Limited Company



: ENVIRONMENTAL EARTH SCIENCES : EM114p- 29 Work Order Pro@ct Client

2144- p ALBERT PARK GAS WORKS REBATCH OY EM114p285

Analysis Holding Time Compliance

dilutions and reruns. Information is also 7rovided re the sam7le container (7reservative) from +hich the analysis aliquot +as taken. Ela7sed 7eriod to analysis re7resents number of days from sam7ling +here no extraction / digestion is involved or 7eriod from extraction / digestion + here this is 7resent. Yor com7osite sam7lesUsam7ling date is assumed to be that of the oldest sam7le contributing to the com7osite. Sam7le date for laboratory 7roduced leachates is assumed as the com7letion date of the leaching 7rocess. Outliers for holding time are based on 0SEPA SW 8p5UAPHAUAS and NEPM (1999). A listing of breaches is 7rovided in the The follo+ing re7ort summarises extraction / 7re7aration and analysis times and com7ares + ith recommended holding times. Dates re7orted re7resent first date of extraction or analysis and 7recludes subsequent Summary of Outliers. Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. Yor non jvolatile analytesU the holding time com7liance assessment com7ares the leach date + ith the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (1p days); Mercury (28 days) & other metals (184 days). A recorded breach therefore does not guarantee a breach for all nonj volatile 7 arameters.

Matrix: WATER					Evaluation:	= Holding time b	Evaluation: $\mathbf{x} = \text{Holding time breach}$; $\checkmark = \text{Within holding time}$.	holding time.
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP070: Total Petroleum Hydrocarbons - Speciation								
Amber Glass Bottle - Unpreserved								
GW14U	GW2p	20-APR-2011	21-APR-2011	2- jAPRj2411	>	16-MAY-2011	18j J0 Nj 2411	>
Amber Glass Bottle - Unpreserved								
GWFU	GW11U	20-APR-2011	27-APR-2011	2- jAPRj2411	>	16-MAY-2011	18j J0 Nj 2411	>
GW13U	GW23U				,			
GW2- U	GWF9U							
GWpFDU	GWppDU							
GW19								
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup	cleanup							
Amber Glass Bottle - Unpreserved								
GW14U	GW2p	20-APR-2011	21-APR-2011	2- jAPRj2411	>	16-MAY-2011	18j J0 Nj 2411	>
Amber Glass Bottle - Unpreserved								
GWp		20-APR-2011	22-APR-2011	2- jAPRj2411	>	16-MAY-2011	18j J0 Nj 2411	>
Amber Glass Bottle - Unpreserved								
GWFU	GW11U	20-APR-2011	27-APR-2011	2- jAPRj2411	>	16-MAY-2011	18j J0 Nj 2411	>
GW13U	GW23U				,			
GW2- U	GWF9U							
GWpFDU	GWppDU							
GW19								
Amber Glass Bottle - Unpreserved								
GWp2D		21-APR-2011	22-APR-2011	28j APRj 2411	>	16-MAY-2011	18j J0 Nj 2411	>



Page Work Order

: F of 5 : EM114p- 29 : ENVIRONMENTAL EARTH SCIENCES : 2144-p ALBERT PARK GAS WORKS REBATCH OY EM114p285

Pro@ct Client

Matrix: WATER					Evaluation:	= Holding time I	Evaluation: $\mathbf{x} = \text{Holding time breach}$; $\checkmark = \text{Within holding time}$.	holding time.
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP071 SG: Total Recoverable Hydrocarbons (NEPM 2010 draft) - Silica gel cleanup	; (NEPM 2010 draft) - Silica gel cleanup							
Amber Glass Bottle - Unpreserved								
GW14U	GW2p	20-APR-2011	21-APR-2011	2- jAPRj2411	>	16-MAY-2011	18j J0 Nj2411	>
Amber Glass Bottle - Unpreserved								
GWp		20-APR-2011	22-APR-2011	2- jAPRj2411	>	16-MAY-2011	18j J0 Nj 2411	>
Amber Glass Bottle - Unpreserved								
GWFU	GW11U	20-APR-2011	27-APR-2011	2- jAPRj2411	>	16-MAY-2011	18j J0 Nj 2411	>
GW13U	GW23U							•
GW2- U	GWF9U							
GWpFDU	GWppDU							
GW19								
Amber Glass Bottle - Unpreserved								
GWp2D		21-APR-2011	22-APR-2011	28j APRj 2411	>	16-MAY-2011	18j J0 Nj 2411	>



: ENVIRONMENTAL EARTH SCIENCES : p of 5 : EM114p- 29 Work Order Pro@ct Client

2144- p ALBERT PARK GAS WORKS REBATCH OY EM114p285

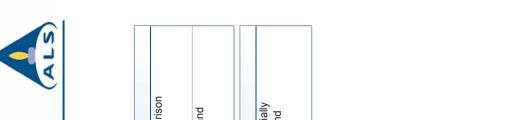
Quality Control Parameter Frequency Compliance

The follo+ ing re7ort summarises the frequency of laboratory QC sam7les analysed + ithin the analytical lot(s) in + hich the submitted sam7le(s) + as(+ here) 7rocessed. Actual rate should be greater than or equal to the ex7ected rate. A listing of breaches is 7rovided in the Summary of Outliers.

Matrix: WATER

Evaluation: x = Quality Control frequency not + ithin s7ecification; v = Quality Control frequency + ithin s7ecification.

Quality Control Sam7le Ty7e		Count	unt		Rate (%)		Quality Control Specification
Analytical Methods	Method	ОС	Regular	Actua!	Expected	Evaluation	
Laboratory Control Sam7les (LCS)							
Total Petroleum Hydrocarbons after Silica Gel Clean 07	EP4-1jHXSG	-	1	7.7	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
TPH j S7eciation	EP4-4	7	11	9.1	2.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
Method Blanks (MB)							
Total Petroleum Hydrocarbons after Silica Gel Clean 07	EP4-1jHXSG	1	1F	7.7	5.0	>	NEPM 1999 Schedule B(F) and ALS QCSF requirement
TPH j S7eciation	EP4-4	~	11	9.1	2.0	`	NEPM 1999 Schedule B(F) and ALS QCSF requirement





Brief Method Summaries

: 2144- p ALBERT PARK GAS WORKS REBATCH OY EM114p285

: ENVIRONMENTAL EARTH SCIENCES

: 3 of 5 : EM114p-29

Work Order

Pro@ct Client

The analytical 7rocedures used by the Environmental Division have been develo7ed from established internationally recogniwed 7rocedures such as those 7ublished by the 0.S EPALAPHALAS and NEPM. In house develo7ed 7rocedures are em7loyed in the absence of documented standards or by client request. The follo+ing re7ort 7rovides brief descri7tions of the analytical 7rocedures em7loyed for results re7orted in the

Analytical Methods Method Descriptions

Analytical Methods TPH j S7eciation Total Petroleum Hydrocarbons after Silica Gel Clean 07	Method EP4-4 EP4-1jHXSG	WATER WATER	Method Descriptions 0 SEPA SW 8p5 j 8413A The sam7le extract is analysed by Ca7illary GC/YID and quantification is by com7arison against an established 3 7oint calibration curve of njAlkane standards. This method is com7liant + ith NEPM (1999) Schedule B(F) (A77dx. 2) (0 SEPA SW 8p5 j 8413A) Sam7le extracts are analysed by Ca7illary GC/YIDUfollo+ ing silica gel clean u7Uand quantified against alkane standards over the range C14 j CF5. This method is com7liant + ith NEPM (1999) Schedule B(F) (Method 345.1)
Preparation Methods	Method	Matrix	Method Descriptions
Se7aratory Yunnel Extraction of Liquids	ORG1pj HX	WATER	Variation of 0 SEPA SW 8p5 j F314B: 344 mL to 4.3L of sam7le is transferred to a se7aratory funnel and serially extracted three times using F4mL DCM for each extract. The resultant extracts are combined Udehydrated Land exchanged into 3 mL of hexane for analysis. ALS default excludes sediment + hich may be resident in the container.

2144- p ALBERT PARK GAS WORKS REBATCH OY EM114p285 : ENVIRONMENTAL EARTH SCIENCES Pro@ct Client

Summary of Outliers

Outliers: Quality Control Samples

The follo+ing re7ort highlights outliers flagged in the Quality Control (QC) Re7ort. Surrogate recovery limits are static and based on 0 SEPA SW8p5 or ALSjQWI/EN/F8 (in the absence of s7ecific 0 SEPA limits). This re7ort dis7lays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

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

Regular Sample Surrogates

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

Outliers: Analysis Holding Time Compliance

This re7ort dis7lays Holding Time breaches only. Only the res7ective Extraction / Pre7aration and/or Analysis com7onent is/are dis7layed.

No Analysis Holding Time Outliers exist.

Outliers: Frequency of Quality Control Samples

The follo+ing re7ort highlights breaches in the Yrequency of Quality Control Sam7les.

No Quality Control Sample Frequency Outliers exist.



ANALYTICAL REPORT

10 May 2011

Environmental Earth Sciences

Level 1 98 Maribyrnong St FOOTSCRAY VIC 3011

Attention: David James

Your Reference: 210074 Albert Park Gas Works

Report Number: ME106119

SAMPLE TYPE: 1 water
SAMPLES RECEIVED: 21/04/2011
PRELIMINARY REPORTEMAILED: Not Issued

 $These \, samples \, were \, analysed \, in \, accordance \, with \, your \, written \, instructions.$

A copy of the instructions is attached with the analytical report.

For and on behalf of:

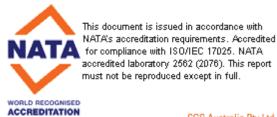
SGS AUSTRALIA PTY LTD

Business Manager: Sue Durukan Sue.Durukan@sgs.com Laboratory Manager: Dr Aaron D. Stott Aaron.Stott@sgs.com

This report has been authorised by the undersigned:

Dr Aaron Stott

Petrina Abbott Client Services Officer



Page 1 of 22

SGS Australia Pty Ltd 34 Norfolk Court Coburg Victoria 3058 t+61 (0)3 9350 4800 www.au.sgs.com

			T
VOC's in water - National list	1.00	LINITO	ME400440 4
Our Reference: Your Reference	LOR	UNITS	ME106119-1 Split 2
Date Sampled			19/04/2011
Sample Type			Water
Container Type			1 Lt p, 500ml
			A,4p, 125ml a,
			2 vials
Date Extracted			29/04/2011
Date Analysed			29/04/2011
Dichlorodifluoromethane (CFC-12)	5	μg/L	<5.0
Chloromethane	5	μg/L	<5.0
Vinyl chloride	5	μg/L	<5.0
Bromomethane	10	μg/L	<10
Trichlorofluoromethane*	10	μg/L	<10
Chloroethane	5	μg/L	<5.0
1,1-Dichloroethene	0.5	μg/L	<0.50
Carbon disulphide	0.5	μg/L	<0.50
1,1,2-Trichlorotrifluoroethane (CFC-113)	0.5	μg/L	<0.50
Iodomethane	2	μg/L	<2.0
Allyl chloride	0.5	μg/L	<0.50
Methylene chloride (DCM)	5	μg/L	<5.0
Acetone	10	μg/L	<10
trans-1,2-Dichloroethene	0.5	μg/L	<0.50
Methyl-tert-butyl ether	1	μg/L	<1.0
1,1-Dichloroethane	0.5	μg/L	<0.50
Acrylonitrile	2	μg/L	<2.0
Vinyl acetate	10	μg/L	<10
cis-1,2-Dichloroethene	0.5	μg/L	<0.50
1,2-Dichloroethane	0.5	μg/L	<0.50
2,2-Dichloropropane	0.5	μg/L	<0.50
Bromochloromethane	0.5	μg/L	<0.50
Chloroform	0.5	μg/L	<0.50
Carbon tetrachloride	0.5	μg/L	<0.50
1,1,1-Trichloroethane	0.5	μg/L	<0.50
1,1-Dichloropropene	0.5	μg/L	<0.50
2-Butanone (MEK)	10	μg/L	<10
Benzene	0.5	μg/L	<0.5
Trichloroethene	0.5	μg/L	<0.50
Dibromomethane	0.5	μg/L	<0.50
1,2-Dichloropropane	0.5	μg/L	<0.50
Bromodichloromethane	0.5	μg/L	<0.50
	1	-	1



			1
VOC's in water - National list			
Our Reference:	LOR	UNITS	ME106119-1
Your Reference			Split 2
Date Sampled Sample Type			19/04/2011 Water
Container Type			1 Lt p, 500ml
7,00			A,4p, 125ml a,
			2 vials
cis-1,3-Dichloropropene	0.5	μg/L	<0.50
Toluene	0.5	μg/L	<0.5
Tetrachloroethene	0.5	μg/L	2.1
trans-1,3-Dichloropropene	0.5	μg/L	<0.50
4-Methyl-2-pentanone (MIBK)	5	μg/L	<5.0
1,1,2-Trichloroethane	0.5	μg/L	<0.50
Dibromochloromethane	0.5	μg/L	<0.50
1,3-Dichloropropane	0.5	μg/L	<0.50
1,2-Dibromoethane (EDB)	0.5	μg/L	<0.50
2-Hexanone (MBK)	5	μg/L	<5.0
Chlorobenzene	0.5	μg/L	<0.50
Ethylbenzene	0.5	μg/L	<0.5
1,1,1,2-Tetrachloroethane	0.5	μg/L	<0.50
meta- & para-Xylene	1	μg/L	<1
ortho-Xylene	0.5	μg/L	<0.5
Styrene	0.5	μg/L	<0.50
Bromoform	0.5	μg/L	<0.50
Isopropylbenzene	0.5	μg/L	<0.50
cis-1,4-Dichloro-2-butene	0.5	μg/L	<0.50
Bromobenzene	0.5	μg/L	<0.50
Propylbenzene	0.5	μg/L	<0.50
1,1,2,2-Tetrachloroethane	0.5	μg/L	<0.50
2-Chlorotoluene	0.5	μg/L	<0.50
1,3,5-Trimethylbenzene	0.5	μg/L	<0.50
1,2,3-trichloropropane	0.5	μg/L	<0.50
trans-1,4-Dichloro-2-butene	0.5	μg/L	<0.50
4-Chlorotoluene	0.5	μg/L	<0.50
tert-Butylbenzene	0.5	μg/L	<0.50
1,2,4-Trimethylbenzene	0.5	μg/L	<0.50
sec-Butylbenzene	0.5	μg/L	<0.50
4-Isopropyltoluene	0.5	μg/L	<0.50
1,3-Dichlorobenzene	0.5	μg/L	<0.50
1,4-Dichlorobenzene	0.5	μg/L	<0.50
n-Butylbenzene	0.5	μg/L	<0.50
1,2-Dichlorobenzene	0.5	μg/L	<0.50
1,2-Dibromo-3-chloropropane (DBCP)	0.5	μg/L	<0.50



VOC's in water - National list			
Our Reference:	LOR	UNITS	ME106119-1
Your Reference			Split 2
Date Sampled			19/04/2011
Sample Type			Water
Container Type			1 Lt p, 500ml
			A,4p, 125ml a,
			2 vials
Hexachlorobutadiene	1	μg/L	<1.0
1,2,4-Trichlorobenzene	0.5	μg/L	<0.50
Naphthalene	0.5	μg/L	<0.50
1,2,3-Trichlorobenzene	0.5	μg/L	<0.50
Dibromofluoromethane	0	%	113
(Surrogate)		Recovery	
1,2-Dichloroethane-d4	0	%	110
(Surrogate)		recovery	
Toluene-d8 (Surrogate)	0	%	111
		recovery	
4-Bromofluorobenzene	0	%	96
(Surrogate)		recovery	



AN403 - TRH C6 - C9			
Our Reference:	LOR	UNITS	ME106119-1
Your Reference			Split 2
Date Sampled			19/04/2011
Sample Type			Water
Container Type			1 Lt p, 500ml
			A,4p, 125ml a,
			2 vials
Date Extracted (C6 - C9)			29/04/2011
Date Analysed (C6 - C9)			29/04/2011
TRH C6 - C9	20	μg/L	<20



AN403 - TRH C10 - C36			
Our Reference:	LOR	UNITS	ME106119-1
Your Reference			Split 2
Date Sampled			19/04/2011
Sample Type			Water
Container Type			1 Lt p, 500ml
			A,4p, 125ml a,
			2 vials
Date Extracted (C ₁₀ - C ₃₆)			28/04/2011
Date Analysed (C ₁₀ - C ₃₆)			28/04/2011
TRH C10 - C14	50	μg/L	<50
TRH C15 - C28	100	μg/L	260
TRH C29 - C36	50	μg/L	<50



ANA20 DALla in waters			
AN420 - PAHs in waters Our Reference:	LOR	UNITS	ME106119-1
Your Reference	LOR	UNITS	Split 2
Date Sampled			19/04/2011
Sample Type			Water
Container Type			1 Lt p, 500ml
			A,4p, 125ml a,
			2 vials
Date Extracted			27/04/2011
Date Analysed			28/04/2011
Naphthalene	0.2	μg/L	<0.20
Acenaphthylene	0.2	μg/L	<0.20
Acenaphthene	0.2	μg/L	<0.20
Fluorene	0.2	μg/L	<0.20
Phenanthrene	0.2	μg/L	<0.20
Anthracene	0.2	μg/L	<0.20
Fluoranthene	0.2	μg/L	<0.20
Pyrene	0.2	μg/L	<0.20
Benz(a)anthracene	0.2	μg/L	<0.20
Chrysene	0.2	μg/L	<0.20
Benzo(b)fluoranthene	0.2	μg/L	<0.20
Benzo(k)fluoranthene	0.2	μg/L	<0.20
Benzo(a)pyrene	0.2	μg/L	<0.20
Indeno(1,2,3-cd)pyrene	0.2	μg/L	<0.20
Dibenz(a,h)anthracene	0.2	μg/L	<0.20
Benzo(g,h,i)perylene	0.2	μg/L	<0.2
Total PAHs	2	μg/L	<2.00
2-Fluorobiphenyl (Surrogate)	0.1	%	63
		Recovery	
Anthracene-d10 (Surrogate)	0.1	%	74
		Recovery	
4-Terphenyl-d14 (Surrogate)	0.1	%	76
		Recovery	



Inorganics			
Our Reference:	LOR	UNITS	ME106119-1
Your Reference			Split 2
Date Sampled			19/04/2011
Sample Type			Water
Container Type			1 Lt p, 500ml
			A,4p, 125ml a,
			2 vials
Date Extracted			29/04/2011
Date Analysed			29/04/2011
Total Dissolved Solids	10	mg/L	920
Sulphide	0.1	mg/L	0.5
O-PO4 as P, Filtered	0.005	mg/L	<0.005



Hexavalent Chromium in Water			
Our Reference:	LOR	UNITS	ME106119-1
Your Reference			Split 2
Date Sampled			19/04/2011
Sample Type			Water
Container Type			1 Lt p, 500ml
			A,4p, 125ml a,
			2 vials
Date Extracted			29/03/2011
Date Analysed			29/03/2011
Hexavalent Chromium, Cr ⁶⁺	0.005	mg/L	<0.005



Cyanide in Water			
Our Reference:	LOR	UNITS	ME106119-1
Your Reference			Split 2
Date Sampled			19/04/2011
Sample Type			Water
Container Type			1 Lt p, 500ml
			A,4p, 125ml a,
			2 vials
Date Extracted			2/05/2011
Date Analysed			2/05/2011
Total Cyanide	0.005	mg/L	0.029
Free Cyanide	0.004	mg/L	0.016
Cyanide (WAD)	0.004	mg/L	0.009



Cations / Anions			
Our Reference:	LOR	UNITS	ME106119-1
Your Reference			Split 2
Date Sampled			19/04/2011
Sample Type			Water
Container Type			1 Lt p, 500ml
			A,4p, 125ml a,
			2 vials
Date Extracted			28/04/2011
Date Analysed			28/04/2011
pH		pH units	7.8
Alkalinity Bicarb CaCO ₃	2	mg/L	390
Alkalinity Carbonate CaCO ₃	2	mg/L	<2
Total Alkalinity as CaCO3	2	mg/L	390
Sulphate as SO ₄	2	mg/L	200
Chloride	2	mg/L	300
Nitrate as N	0.010	mg/L	<0.010
Nitrite as N	0.003	mg/L	0.005
Fluoride	0.1	mg/L	1.1
Calcium	0.1	mg/L	32
Magnesium	0.1	mg/L	24
Sodium	0.1	mg/L	240
Potassium	0.2	mg/L	6.8



Trace HM (ICP-MS)-Dissolved			
Our Reference:	LOR	UNITS	ME106119-1
Your Reference			Split 2
Date Sampled			19/04/2011
Sample Type			Water
Container Type			1 Lt p, 500ml
			A,4p, 125ml a,
			2 vials
Date Extracted (Metals-ICPMS)			29/04/2011
Date Analysed (Metals-ICPMS)			29/04/2011
Aluminium	1	μg/L	41
Arsenic	1	μg/L	190
Cadmium	0.1	μg/L	<0.1
Copper	1	μg/L	<1
Iron	5	μg/L	590
Lead	1	μg/L	<1
Nickel	1	μg/L	9
Zinc	1	μg/L	3
Cobalt	1	μg/L	<1
Selenium	2	μg/L	<2
Boron	1	μg/L	700
Manganese	1	μg/L	190



Mercury Cold Vapor/Hg Analyser			
Our Reference:	LOR	UNITS	ME106119-1
Your Reference			Split 2
Date Sampled			19/04/2011
Sample Type			Water
Container Type			1 Lt p, 500ml
			A,4p, 125ml a,
			2 vials
Date Extracted (Mercury)			29/04/2011
Date Analysed (Mercury)			29/04/2011
Mercury (Dissolved)	0.0005	mg/L	<0.0005



Method ID	Methodology Summary
AN434	The analysis of VOC compounds in soils, sediments, sludges and waters by gas chromatography with mass spectrometric (GCMS) detection based on USEPA SW-846 method 8260B.
AN403	The analysis of C_6 - C_9 TRH compounds in soils, sediments, sludges and waters by gas chromatography with mass spectrometric (GC/MS) detection based on USEPA SW-846 method 8260B. The analysis of C_{10} - C_{40} TRH compounds in soils, sediments, sludges and waters by gas chromatography with flame ionisation (GC/FID) detection based on USEPA SW-846 method 8015C.
AN420	The analysis of SVOC including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols by GC/MS based on USEPA Method 8270C.
AN113	Determination of total solids (TS), total dissolved solids (TDS) and volatile solids (VS) by gravimetic analysis, based on APHA Methods 2540B, 2540C, 2540E & 2540G.
AN149	Sulphide - determined titrimetrically using an iodometric titration following a zinc acetate treatment to overcome interferences. Based on APHA 20th ED, 4500-S2-F.
AN278	
AN201	Hexavalent Chromium (Cr ⁶⁺) - water sample is filtered and determined by colourimetric technique. Soil sample is extracted by hot alkali leach, the resulting leachate is then neutralised and analysed by colourimetric technique, based on USEPA 3060A.
AN154	Cyanide is analysed by discrete analyser. Reference APHA 4500-CN-C/E.
AN101	pH - Measured using pH meter and electrode in accordance with APHA 20th ED, 4500-H+.
AN135	The determination of Total, Bicarbonate, Carbonate & Hydroxide Alkalinity in potable & ground waterr, sewage, trade waste & saline water, in accordance with APHA 21th ED, Section 4500-H+ B & Section 2320 B.
AN245	Determination of Chloride, Sulphate, Nitrate & Nitrite by Ion Chromatography, based on APHA method 4110C & 4110Cl A
AN277	Nitrite as N- determined by colourimetric technique using discrete analyser. Based in APHA 21st Edition, 4500-Norg D/USEPA 351.2.
ANA-014	Fluoride - Determined potentiometrically by ion-selective electrode.
AN320	Determination of elements by ICP-OES following appropriate sample preparation & digestion.
AN318	Determination of elements at trace levels in waters by ICP-MS. Method based on USEPA 6020A
SEM-005	Determination of Mercury by Cold Vapour AAS following appropriate sample preparation & digestion. Based on APHA 21st Edition, 3112B.



PROJECT: 210074 Albert Park Gas Works REPORT NO: ME106119								6119
QUALITY CONTROL VOC's in water - National list	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate %RPD	Spike Sm#	Matrix Spike % Recovery %RPD
Date Extracted				29/04/20 11	[NT]	[NT]	LCS	29/04/2011
Date Analysed				29/04/20 11	[NT]	[NT]	LCS	29/04/2011
Dichlorodifluoromethane (CFC-12)	μg/L	5	AN434	<5.0	[NT]	[NT]	LCS	105%
Chloromethane	μg/L	5	AN434	<5.0	[NT]	[NT]	LCS	123%
Vinyl chloride	μg/L	5	AN434	<5.0	[NT]	[NT]	LCS	100%
Bromomethane	μg/L	10	AN434	<10	[NT]	[NT]	LCS	107%
Trichlorofluoromethane*	μg/L	10	AN434	<10	[NT]	[NT]	LCS	132%
Chloroethane	μg/L	5	AN434	<5.0	[NT]	[NT]	LCS	127%
1,1-Dichloroethene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	107%
Carbon disulphide	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	121%
1,1,2-Trichlorotrifluoroet hane (CFC-113)	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	117%
lodomethane	μg/L	2	AN434	<2.0	[NT]	[NT]	LCS	61%
Allyl chloride	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	118%
Methylene chloride (DCM)	μg/L	5	AN434	<5.0	[NT]	[NT]	LCS	115%
Acetone	μg/L	10	AN434	<10	[NT]	[NT]	LCS	108%
trans-1,2-Dichloroethene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	124%
Methyl-tert-butyl ether	μg/L	1	AN434	<1.0	[NT]	[NT]	LCS	106%
1,1-Dichloroethane	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	115%
Acrylonitrile	μg/L	2	AN434	<2.0	[NT]	[NT]	LCS	127%
Vinyl acetate	μg/L	10	AN434	<10	[NT]	[NT]	LCS	117%
cis-1,2-Dichloroethene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	102%
1,2-Dichloroethane	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	105%
2,2-Dichloropropane	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	115%
Bromochloromethane	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	104%
Chloroform	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	118%
Carbon tetrachloride	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	120%
1,1,1-Trichloroethane	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	118%
1,1-Dichloropropene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	117%
2-Butanone (MEK)	μg/L	10	AN434	<10	[NT]	[NT]	LCS	101%
Benzene	μg/L	0.5	AN434	<0.5	[NT]	[NT]	LCS	107%
Trichloroethene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	107%
Dibromomethane	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	100%
1,2-Dichloropropane	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	104%
Bromodichloromethane	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	93%
cis-1,3-Dichloropropene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	84%
Toluene	μg/L	0.5	AN434	<0.5	[NT]	[NT]	LCS	108%
Tetrachloroethene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	102%



PROJECT: 210074 Albert Park Gas Works REPORT NO: ME106119								6119
QUALITY CONTROL VOC's in water - National list	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate %RPD	Spike Sm#	Matrix Spike % Recovery %RPD
trans-1,3-Dichloropropen e	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	91%
4-Methyl-2-pentanone (MIBK)	μg/L	5	AN434	<5.0	[NT]	[NT]	LCS	96%
1,1,2-Trichloroethane	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	104%
Dibromochloromethane	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	85%
1,3-Dichloropropane	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	99%
1,2-Dibromoethane (EDB)	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	93%
2-Hexanone (MBK)	μg/L	5	AN434	<5.0	[NT]	[NT]	LCS	91%
Chlorobenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	112%
Ethylbenzene	μg/L	0.5	AN434	<0.5	[NT]	[NT]	LCS	112%
1,1,1,2-Tetrachloroethan e	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	98%
meta- & para-Xylene	μg/L	1	AN434	<1	[NT]	[NT]	LCS	110%
ortho-Xylene	μg/L	0.5	AN434	<0.5	[NT]	[NT]	LCS	97%
Styrene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	100%
Bromoform	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	117%
Isopropylbenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	108%
cis-1,4-Dichloro-2-buten e	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	78%
Bromobenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	104%
Propylbenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	117%
1,1,2,2-Tetrachloroethan e	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	112%
2-Chlorotoluene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	105%
1,3,5-Trimethylbenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	109%
1,2,3-trichloropropane	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	107%
trans-1,4-Dichloro-2-but ene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	93%
4-Chlorotoluene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	106%
tert-Butylbenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	109%
1,2,4-Trimethylbenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	107%
sec-Butylbenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	117%
4-Isopropyltoluene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	107%
1,3-Dichlorobenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	109%
1,4-Dichlorobenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	108%
n-Butylbenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	116%
1,2-Dichlorobenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	104%
1,2-Dibromo-3-chloropro pane (DBCP)	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	85%
Hexachlorobutadiene	μg/L	1	AN434	<1.0	[NT]	[NT]	LCS	115%
1,2,4-Trichlorobenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	87%



PROJECT:	k Gas Work	REPORT NO: ME106119						
QUALITY CONTROL VOC's in water - National list	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate %RPD	Spike Sm#	Matrix Spike % Recovery %RPD
Naphthalene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	76%
1,2,3-Trichlorobenzene	μg/L	0.5	AN434	<0.50	[NT]	[NT]	LCS	91%
Dibromofluoromethane (Surrogate)	% Recover y	0	AN434	115	[NT]	[NT]	LCS	105%
1,2-Dichloroethane-d4 (Surrogate)	% recover y	0	AN434	113	[NT]	[NT]	LCS	108%
Toluene-d8 (Surrogate)	% recover y	0	AN434	119	[NT]	[NT]	LCS	113%
4-Bromofluorobenzene (Surrogate)	% recover y	0	AN434	110	[NT]	[NT]	LCS	110%
QUALITY CONTROL AN403 - TRH C6 - C9	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate %RPD	Spike Sm#	Matrix Spike % Recovery %RPD
Date Extracted (C ₆ - C ₉)				29/04/20 11	[NT]	[NT]	LCS	29/04/2011
Date Analysed (C6 - C9)				29/04/20 11	[NT]	[NT]	LCS	29/04/2011
TRH C6 - C9	μg/L	20	AN403	<20	[NT]	[NT]	LCS	97%
QUALITY CONTROL AN403 - TRH C ₁₀ - C ₃₆	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate %RPD	Spike Sm#	Matrix Spike % Recovery %RPD
Date Extracted (C ₁₀ -				28/04/20	[NT]	[NT]	LCS	28/04/2011

28/04/20

11

<50

<100

<50

50

100

50

μg/L

μg/L

μg/L

AN403

AN403

AN403

[NT]

[NT]

[NT]

[NT]

[NT]

[NT]

[NT]

[NT]

LCS

LCS

LCS

LCS

28/04/2011

82%

87%

82%



Date Analysed (C₁₀ -

C36)

TRH C₁₀ - C₁₄

TRH C₁₅ - C₂₈

TRH C29 - C36

PROJECT:	210074 AI	bert Parl	Gas Work	REPORT NO: ME106119				
QUALITY CONTROL AN420 - PAHs in waters	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate %RPD	Spike Sm#	Matrix Spike % Recovery %RPD
Date Extracted				27/04/20 11	[NT]	[NT]	LCS	27/04/2011
Date Analysed				28/04/20 11	[NT]	[NT]	LCS	28/04/2011
Naphthalene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	82%
Acenaphthylene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	81%
Acenaphthene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	81%
Fluorene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	81%
Phenanthrene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	81%
Anthracene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	82%
Fluoranthene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	82%
Pyrene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	82%
Benz(a)anthracene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	80%
Chrysene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	110%
Benzo(b)fluoranthene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	84%
Benzo(k)fluoranthene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	88%
Benzo(a)pyrene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	85%
Indeno(1,2,3-cd)pyrene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	107%
Dibenz(a,h)anthracene	μg/L	0.2	AN420	<0.20	[NT]	[NT]	LCS	110%
Benzo(g,h,i)perylene	μg/L	0.2	AN420	<0.2	[NT]	[NT]	LCS	109%
Total PAHs	μg/L	2	AN420	<2.00	[NT]	[NT]	[NR]	[NR]
2-Fluorobiphenyl (Surrogate)	% Recover y	0.1	AN420	62	[NT]	[NT]	LCS	76%
Anthracene-d10 (Surrogate)	% Recover y	0.1	AN420	69	[NT]	[NT]	LCS	80%
4-Terphenyl-d14 (Surrogate)	% Recover y	0.1	AN420	75	[NT]	[NT]	LCS	81%



PROJECT:	210074 AI	bert Parl	k Gas Works	S		REPORT	NO: ME10	6119
QUALITY CONTROL	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate	Spike Sm#	Matrix Spike % Recovery
Inorganics						%RPD		%RPD
Date Extracted				29/4/201 1	[NT]	[NT]	LCS	29/4/2011
Date Analysed				29/4/201 1	[NT]	[NT]	LCS	29/4/2011
Total Dissolved Solids	mg/L	10	AN113	<10	[NT]	[NT]	LCS	110%
Sulphide	mg/L	0.1	AN149	<0.5	[NT]	[NT]	LCS	90%
O-PO4 as P, Filtered	mg/L	0.005	AN278	<0.005	[NT]	[NT]	LCS	89%

QUALITY CONTROL	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate	Spike Sm#	Matrix Spike % Recovery
Hexavalent Chromium in Water						%RPD		%RPD
Date Extracted				29/04/20 11	[NT]	[NT]	LCS	29/04/2011
Date Analysed				29/04/20 11	[NT]	[NT]	LCS	29/04/2011
Hexavalent Chromium, Cr ⁶⁺	mg/L	0.005	AN201	<0.005	[NT]	[NT]	LCS	97%

QUALITY CONTROL Cyanide in Water	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate %RPD	Spike Sm#	Matrix Spike % Recovery %RPD
Date Extracted				02/05/20 11	[NT]	[NT]	LCS	02/05/2011
Date Analysed				02/05/20 11	[NT]	[NT]	LCS	02/05/2011
Total Cyanide	mg/L	0.005		<0.005	[NT]	[NT]	LCS	88%
Free Cyanide	mg/L	0.004	AN154	<0.004	[NT]	[NT]	LCS	88%
Cyanide (WAD)	mg/L	0.004	AN154	<0.004	[NT]	[NT]	LCS	88%

QUALITY CONTROL Cations / Anions	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate %RPD	Spike Sm#	Matrix Spike % Recovery %RPD
Date Extracted				28/04/20 11	[NT]	[NT]	LCS	22/4/11
Date Analysed				28/04/20 11	[NT]	[NT]	LCS	22/4/11
рН	pH units		AN101	[NT]	[NT]	[NT]	[NR]	[NR]
Alkalinity Bicarb CaCO ₃	mg/L	2	AN135	<2	[NT]	[NT]	LCS	93%
Alkalinity Carbonate CaCO ₃	mg/L	2	AN135	<2	[NT]	[NT]	LCS	93%
Total Alkalinity as CaCO ₃	mg/L	2	AN135	<2	[NT]	[NT]	LCS	93%
Sulphate as SO ₄	mg/L	2	AN245	<2	[NT]	[NT]	LCS	100%
Chloride	mg/L	2	AN245	<2	[NT]	[NT]	LCS	101%



QUALITY CONTROL	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate	Spike Sm#	Matrix Spike % Recovery
Cations / Anions						%RPD		%RPD
Nitrate as N	mg/L	0.010	AN245	<0.010	[NT]	[NT]	LCS	88%
Nitrite as N	mg/L	0.003	AN277	<0.003	[NT]	[NT]	LCS	92%
Fluoride	mg/L	0.1	ANA-014	<0.1	[NT]	[NT]	LCS	103%
Calcium	mg/L	0.1	AN320	<0.1	[NT]	[NT]	LCS	102%
Magnesium	mg/L	0.1	AN320	<0.1	[NT]	[NT]	LCS	100%
Sodium	mg/L	0.1	AN320	<0.1	[NT]	[NT]	LCS	110%
Potassium	mg/L	0.2	AN320	<0.2	[NT]	[NT]	LCS	107%

QUALITY CONTROL Trace HM (ICP-MS)-Dissolved	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate %RPD	Spike Sm#	Matrix Spike % Recovery %RPD
Date Extracted (Metals-ICPMS)				29/04/20 11	[NT]	[NT]	LCS	29/04/2011
Date Analysed (Metals-ICPMS)				29/04/20 11	[NT]	[NT]	LCS	29/04/2011
Aluminium	μg/L	1	AN318	<1	[NT]	[NT]	LCS	101%
Arsenic	μg/L	1	AN318	<1	[NT]	[NT]	LCS	100%
Cadmium	μg/L	0.1	AN318	<0.1	[NT]	[NT]	LCS	106%
Copper	μg/L	1	AN318	<1	[NT]	[NT]	LCS	100%
Iron	μg/L	5	AN318	<5	[NT]	[NT]	LCS	105%
Lead	μg/L	1	AN318	<1	[NT]	[NT]	LCS	108%
Nickel	μg/L	1	AN318	<1	[NT]	[NT]	LCS	103%
Zinc	μg/L	1	AN318	<1	[NT]	[NT]	LCS	97%
Cobalt	μg/L	1	AN318	<1	[NT]	[NT]	LCS	103%
Selenium	μg/L	2	AN318	<2	[NT]	[NT]	LCS	99%
Boron	μg/L	1	AN318	<1	[NT]	[NT]	LCS	104%
Manganese	μg/L	1	AN318	<1	[NT]	[NT]	LCS	105%



PROJECT:	210074 AI	bert Park	Gas Works	3		REPORT	NO: ME10	6119
QUALITY CONTROL	UNITS	LOR	METHOD	Blank	Duplicate Sm#	Duplicate	Spike Sm#	Matrix Spike % Recovery
Mercury Cold Vapor/Hg Analyser						%RPD		%RPD
Date Extracted (Mercury)				29/04/20 11	[NT]	[NT]	LCS	29/04/2011
Date Analysed (Mercury)				29/04/20 11	[NT]	[NT]	LCS	29/04/2011
Mercury (Dissolved)	mg/L	0.0005	SEM-005	<0.0005	[NT]	[NT]	LCS	104%



PROJECT: 210074 Albert Park Gas Works REPORT NO: ME106119

Result Codes

[INS] : Insufficient Sample for this test [RPD] : Relative Percentage Difference [NR] : Not Requested * : Not part of NATA Accreditation

[NT] : Not tested [N/A] : Not Applicable

Report Comments

Hexavalent Cr, Cyanide and metals were all analysed in SGS Sydney, report no: SE87258

NATA Corporate Accreditation No. 2562, Site No 2076

Note: Test results are not corrected for recovery (excluding Dioxins/Furans* and PAH in XAD and PUF).

This document is issued by the Company subject to its General Conditions of Service (www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues established therein.

This document is to be treated as an original within the meaning of UCP 600. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instructions, if any.

The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Quality Control Protocol

Method Blank: An analyte free matrix to which all reagents are added in the same volume or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. A method blank is prepared every 20 samples.

Duplicate: A separate portion of a sample being analysed that is treated the same as the other samples in the batch. One duplicate is processed at least every 10 samples.

Surrogate Spike: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. Surrogates are added to samples before extraction to monitor extraction efficiency and percent recovery in each sample.

Internal Standard: Added to all samples requiring analysis for organics (where relevant) or metals by ICP after the extraction/digestion process; the compounds/elements serve to give a standard of retention time and/or response, which is invariant from run-to-run with the instruments.

Laboratory Control Sample: A known matrix spiked with compound(s) representative of the target analytes. It is used to document laboratory performance. When the results of the matrix spike analysis indicates a potential problem due to the sample matrix itself, the LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

Matrix Spike: An aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Quality Acceptance Criteria

Unless otherwise specified in the test method, the following general acceptance criteria apply:

Method Blanks: <LOR

Duplicates: <5 x LOR: No RPD criteria applied.

>5 x LOR: 0-30% RPD is accepted.

LCS's: Determined by Control Charts.

Where control charts have not been developed, the Matrix Spikes criteria apply.

Matrix Spikes: 70-130% recovery is accepted for metals / inorganics.

60-140% is accepted for organics.

Surrogates: 60-130% recovery is accepted for BTEX.

70-130% recovery is accepted for other organics.





APPENDIX D QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES



TABLE OF CONTENTS

1	INT	RODUCTION AND BACKGROUND	2
	1.1	INTRODUCTION	2
	1.2	BACKGROUND	3
2	DAT	A QUALITY OBJECTIVES	4
3	QUA	ALITY CONTROL AND QUALITY ASSURANCE	6
	3.1	MEASUREMENT DATA QUALITY OBJECTIVES	6
		3.1.1 Repeatability (Field collected intra-laboratory duplicates)	7
		3.1.2 Precision	7
		3.1.3 Accuracy	8
		3.1.4 Representativeness	8
		3.1.5 Completeness	9
		3.1.6 Comparability	9
		3.1.7 Sensitivity	9
		3.1.8 Blanks	9
		3.1.9 Holding times	10
		3.1.10 Procedures for anomalous samples and confirmation checking	10
	3.2	FIELD QA/QC	10
		3.2.1 Details of sampling team	10
		3.2.2 Groundwater sampling methodology	10
		3.2.3 Sampling controls	11
		3.2.3 Field instrument calibration	12
	3.3	LABORATORY QA/QC	12
		3.3.1 Duplicate sampling	14
		3.3.2 Groundwater relative percentage difference values	21
	3.4	QA/QC DATA EVALUATION	21
4	RFF	FRENCES	21

210074- Appendix D-QAQC V2 D1



1 INTRODUCTION AND BACKGROUND

1.1 Introduction

The aim of a quality control and quality assurance (QA/QC) is to deliver data that is:

- representative of what is sampled;
- precise;
- accurate; and
- reproducible.

As investigations involve both field and laboratory QA/QC, these are similarly divided. The objective of this document is to evaluate and identify the data quality objectives (DQOs) and the data quality indicators (DQIs), which are used to assess whether the DQOs have been met.

All surface water, groundwater and soil sampling procedures to be followed are described in full in the *Soil, gas and groundwater sampling manual (*Environmental Earth Sciences Pty Ltd 2009). This document should be referred to for field procedures, sampling and conveyance. Copies are available for inspection if required.

The Victorian guideline documents used in the evaluation of the data set for this investigation are:

- Australian and New Zealand Environment and Conservation Council 1992, Australian and New Zealand Guidelines for the assessment and management of contaminated sites, Australia and New Zealand Environment Council, National Health and Medical Research Council, Melbourne, VIC;
- EPA Victoria 2009, Industrial Waste Resource Guidelines (IWRG) *Publication IWRG701, sampling and analysis of waters, wastewaters, soils and wastes*;
- EPA Victoria 2000, *Publication 669, Groundwater sampling guidelines*, EPA VIC, Southbank, VIC;
- National Environment Protection Council (NEPC) 1999, *National environment protection* (assessment of site contamination) measure, National Environment Protection Council, Adelaide, SA:
- Standards Australia 2005, Guide to the sampling and investigation of potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds, (AS 4482.1), Standards Australia, Homebush, NSW; and
- Standards Australia 1999, *Guide to the sampling and investigation of potentially contaminated soil, Part 2: Volatile substances*, (AS 4482.2), Standards Australia, Homebush, NSW.

Data quality is typically discussed in terms of precision, accuracy, representativeness, comparability and completeness. These are referred to as the PARCC parameters. The PARCC (and additional QA) parameters are discussed within this report.



The following items form part of the QA/QC appendix:

- repeatability;
- precision;
- accuracy;
- representativeness;
- completeness;
- comparability;
- sensitivity;
- holding times;
- blanks; and
- procedures for anomalous samples and confirmation checking.

1.2 Background

The terms "quality assurance" and "quality control" are often confused. In any program, quality control is required before assurance can be put in place. With respect to laboratory analysis activities, these terms are defined as follows:

Quality Assurance: "All the planned and systematic activities implemented within the quality system and demonstrated as needed to provide adequate confidence that an entity will fulfil requirements for quality". (ISO 8402-1995)

This encompasses all actions, procedures, checks and decisions undertaken to ensure the accuracy and reliability of analysis results. It includes routine procedures which ensure proper sample control, data transfer, instrument calibration, the decisions required to select and properly train staff, select equipment and analytical methods, and the day to day judgements resulting from regular scrutiny and maintenance of the laboratory system.

Quality Control: "The operational techniques and activities that are used to fulfil the requirements for quality". (ISO 8402-1995)

These are the components of QA which serve to monitor and measure the effectiveness of other QA procedures by comparison with previously decided objectives. They include measurement of the quality of reagents, cleanliness of apparatus, accuracy and precision of methods and instrumentation, and reliability of all of these factors as implemented in a given laboratory from day to day.

A complete discussion of either of these terms or the steps for implementing them is beyond the scope of this document. It is widely recognised, however, that adoption of sound laboratory QA and QC procedures is essential and readers are referred to documentation available from the National Association of Testing Authorities (NATA), if further information is required.



2 DATA QUALITY OBJECTIVES

Development of data quality objectives (DQOs) for each project is a requirement of the 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. Many environmental practitioners are now following this process.

The DQO process is defined by seven steps. Each of these steps has been given due consideration in the undertaking of this project. In brief, these steps are:

- Step 1: State the problem and establish the DQO team.
- Step 2: Determine the possible and probable actions that will resolve the problems.
- Step 3: Identify the informational inputs to assist in the problem resolution.
- Step 4: Define the boundaries of the study (geographical, temporal, etc).
- Step 5: Develop and define decision rules.
- Step 6: Specify tolerable limits to reduce probability of incorrect decisions.
- Step 7: Ensure the quality of the information obtained.

Step 1 — State the problem

The problem is that the site has been used for industrial land-use and the potential exists for soil and groundwater contamination to have occurred during this time. The objectives of this groundwater investigation were to gain a further understanding of hydrogeological and hydrogeochemical data related to the site. The data and observations noted during this groundwater investigation will assist to address the higher risk issues identified at the site.

Step 2 — Identify the decision

These works have been commissioned to to address the higher risk issues identified at the site. A decision is required on what management action is necessary (if any) to ensure the site becomes or remains suitable for its intended use. If the site is deemed not to be suitable for its intended use, direction will be given to determine what is considered by Environmental Earth Sciences VIC to be the most suitable path for making the site suitable.

Step 3 — Identify the inputs to the decision

The study inputs included a, review of environmental investigations undertaken at the site, data from groundwater investigation undertaken at the site, and reference to published criteria to assist the decision-making process.

Step 4 — Define the study boundaries

The physical boundary of the study area is defined in Section 3 of the report and Figure 2 and 3.

Step 5 — Develop and define decision rules

All analytical data will be compared and evaluated against appropriate published criteria. The State Environment Protection Policy *Groundwaters of Victoria* (SEPP (1997) *GoV*) provides the framework for the protection of groundwater and associated beneficial uses throughout Victoria. The policy allows for a consistent approach to the prevention of contamination of groundwater and clean-up of pollution of groundwater throughout Victoria and sets environmental quality indicators and objectives for each beneficial use.



The SEPP (1997) GoV defines certain aquifer categories based on salinity reported as total dissolved salts (TDS) and associated beneficial uses to be protected. In addition, where the SEPP GoV does not specify contaminant limits, the ANZECC/ ARMCANZ (2000) *Australian and New Zealand guidelines for fresh and marine water quality* and NEPM (1999) *Groundwater investigation levels* (GILs) are consulted. In Victoria, the NEPM levels are generally used in preference to ANZECC/ ARMCANZ criteria for all beneficial uses other than ecological receptors. The NEPM HIL's presented within Schedule B(1) Table 5-B are essentially based on the ANZECC 1992 *Australian water quality guidelines for fresh and marine waters*.

Step 6 — Specify tolerable limits on decision errors

Acceptable limits for field data analysis (relative percent differences for primary and duplicate results) are between 50 and 150 percent (depending on the origin of the sample and volatility of the chemicals present). These are summarised in Table 2 as the measurement data quality indicators (MDQIs), which will be used to establish whether the DQOs have been met.

Acceptable limits for field data analysis (relative percent differences for primary and duplicate results) are between 50 and 150 percent (depending on the origin of the sample and volatility of the chemicals present). Acceptable limits for laboratory duplicate analysis may be affected by the volatility of the chemicals present and will be set based on site specific information such as background concentrations. These are summarised in Table 2 as the measurement data quality indicators (MDQIs), which will be used to establish whether the DQOs have been met.

Most of the procedures in the NEPM (1999) have risk probabilities associated with allowable error margins incorporated into them. It is therefore proposed that no further "tolerable limits" be investigated at this stage of the project.

Step 7 — Optimise the design

The sample design is based on assessment of possible migration of contaminants of concern (CoC) from the site. Environmental Earth Sciences VIC believes that the sampling design is optimal considering temporal limitations and access constraints. The density of the sampling locations and the quality of the data set are suitable for determination of the suitability of the site for its proposed current and future use.



TABLE 1 MEASUREMENT DATA QUALITY INDICATORS (MDQIS)

Parameter	Procedure	Minimum Fraguency	Crit	eria
Parameter	Procedure	Minimum Frequency	(5 to 10x LOR ⁴)	>10x LOR
		1 in 20 - metals	<150 RPD	<50 RPD
Precision	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			
Ponrocentativeness*	Reagent Blanks	1 per batch	No de	tection
Representativeness*	Holding Times*	Every sample		-
Blanks**	Trip Blank	1 nor botob	No do	tection
Dialiks	Rinsate Blanks	1 per batch	No de	tection
Sensitivity	Limit of Reporting	Every sample	LOR < 1/2	site criteria

Note(s):

- 1. RPD relative percentage difference
- 2. %R percent recovery
- 3. LOR limit of reporting
- 4. 4 no limit at <5x LOR
- 5. * the MDQI is usually specified in the standard method. If not, use the default values set out in this table
- 6. ** only necessary when measuring dissolved metals and volatile organic compounds in water samples

3 QUALITY CONTROL AND QUALITY ASSURANCE

3.1 Measurement data quality objectives

Step 7 of the DQO process (Section 2.0) is a focus on the quality of the information by measurement, that is, measurement data quality objectives (MDQOs). The aim of QA/QC is to deliver data that is representative of what is sampled, precise, accurate and reproducible. As investigations involve both field and laboratory QA/QC, these are similarly divided. The objective of this section is to provide the MDQOs and the measurement data quality indicators (MDQIs), which will be used to establish whether the DQOs have been met.

All groundwater and soil sampling procedures need to be undertaken according to a standard procedure, for example those procedures set out in:

 EPA Victoria 2009, Industrial Waste Resource Guidelines (IWRG) Publication IWRG701, sampling and analysis of waters, wastewaters, soils and wastes;

210074- Appendix D-QAQC V2



- EPA Victoria (2000) *Groundwater sampling guidelines*. Publication 669. EPA Information Bulletin
- National Environment Protection Council (NEPC) 1999 National environment protection (assessment of site contamination) measure
- Standards Australia 1997 Guide to the sampling and investigation of potentially contaminated soil (Part 1: Non-volatile and semi-volatile compounds. AS 4482.1)
- Standards Australia 1999 Guide to the sampling and investigation of potentially contaminated soil (Part 2: Volatile substances). AS 4482.1

Measurement data quality is typically discussed in terms of precision, accuracy, representativeness, comparability and completeness. Although not necessarily considered in list order, the following items should form part of the QA/QC data evaluation:

- measured Parameters: precision, accuracy, repeatability (comparability) and blanks;
 and
- assessed Parameters: completeness, representative of site conditions, sensitivity and holding times.

The laboratories used should be NATA accredited for the analytical methods performed. Containers, sample preservation (if necessary) and holding times should be consistent with industry practices as set out in NEPM and as defined by ASTM.

The QA parameters selected and the criteria used to evaluate the analytical data are defined below and presented in Table 1 of this report.

3.1.1 Repeatability (Field collected intra-laboratory duplicates)

These samples provide a check on the analytical performance of the laboratory. At least 5 percent of groundwater samples (1 in 20) from a site are collected in duplicate. For comparability of data, it is important that there is little delay in the sample submission. For split samples, because of error associated with field splitting, an RPD of between 80 and 150% (depending on the substance) will be allowed as the MDQI.

Any value >50% RPD will be noted and discussed, as per Standards Australia requirements, with respect to its acceptability for inclusion in the data-set.

3.1.2 Precision

Precision is a measure of the reproducibility of results, and is assessed on the basis of agreement between a set of replicate results obtained from duplicate analyses. The precision of a duplicate determination can be measured as relative percentage difference (RPD), and is calculated from the following equation:

$$RPD = \left[\frac{X1 - X2}{\left(\frac{X1 + X2}{2}\right)} \right] \times 100$$

where: X1 is the first duplicate value

X2 is the second duplicate value



The groundwater intra- and inter-laboratory duplicates and calculated RPDs are presented in Table 2 and Table 3.

3.1.3 Accuracy

Accuracy is a measure of the agreement between an experimental determination and the true value of the parameter being measured. The determination of accuracy can be achieved through the analysis of known reference materials or assessed by the analysis of matrix spikes. Accuracy is measured in terms of percentage recovery as defined by the following equation:

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where: %R = percentage recovery of the spike

SSR = spiked sample result SR = sample result (native)

SA = spike added

Laboratory personnel calculate percentage recoveries of spiked compounds, which are evaluated against control or acceptance limits taken from the appropriate method or the Contract Laboratory Program Statement of Work. If the spike recovery for a sample does not fall within the prescribed control limits, laboratory based corrective action is required.

Surrogate spikes consist of spiking non-target compounds into the sample prior to analysis. The spiked compounds are expected to behave during analysis in the same way as the target compounds. Every sample is spiked prior to extraction or analysis with surrogate compounds that are representative of the analysis. If surrogate spike recovery does not meet the prescribed control limits, samples should be reanalysed.

For inorganic analyses, certified reference materials are analysed (for SAL this is BCSS-1).

3.1.4 Representativeness

Data Point Evaluation

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition.

Representativeness is primarily dependent on the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handling and analysis protocols, and use of proper chain-of-custody and documentation procedures. Blanks, holding times and field duplicates (intra- and inter-laboratory) are all QA parameters that can assist in the analysis of representativeness for data point evaluation and will need to be analysed as part of the measurement data quality assessment.

Data Set Evaluation

Whether the data is representative of the site is checked in part by undertaking an evaluation of the whole data set to establish the data is compatible. Data compatibility is authenticated by confirming that the laws of chemistry are upheld (i.e. nitrate is not present when Eh is - 250 mV), that intra-laboratory analysis relationships are consistent (i.e. BTEX is a subset of the TPH C_6 - C_9 fraction), that observations and field measurements are in agreement with



other field data and the laboratory data and that results are consistent with the geology, history and logic.

3.1.5 Completeness

The following information is required to check for completeness of data sets:

- chain-of-custody forms (completed by Environmental Earth Sciences VIC and the laboratory);
- sample receipt forms;
- all requested sample results reported;
- all blank data reported;
- all laboratory duplicates reported and RPDs calculated;
- all surrogate spike data reported;
- all matrix spike data reported; and
- NATA stamp on reports.

3.1.6 Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample location, tempreture, sampling procedures) under which separate sets of data are produced to ensure minimal common error. Data comparability should be demonstrated by the use of standardised sampling and analysis procedures. Data comparability was maintained by undertaking the investigations as follows:

- the groundwater samples collected during the investigation were conducted by trained Environmental Earth Sciences VIC field team using Environmental Earth Sciences' standard operating procedures;
- all samples were collected using push tube sampling methods; and
- the same laboratories (ALS and LabMark) were used for organic and inorganic analysis for all relevant samples and using the same NATA approved analytical methods.

3.1.7 Sensitivity

When interferences are present in the sample, a loss of sensitivity can occur resulting in an increase in the method detection limit. In some instances (e.g. where one or more compounds have particularly high concentrations), the sample must be diluted for analysis. This increases the method detection limit by the dilution factor.

The detection limits achieved by the laboratory, when adjusted for dry weight and interferences from the presence of other chemicals within the sampled matrix, must be less than half the site criteria for all analytes tested (i.e. 2 x LOR <site criteria).

3.1.8 Blanks

To meet the QC acceptance criteria, laboratory blanks should have no detectable concentrations of the target compounds. Trip blanks (taken to and returned from the field) and rinsate blanks (taken in the field) will only be necessary for analysing dissolved metals and volatile organic compounds in water samples where the threshold value is near the detection limit for an individual compound or element.



3.1.9 Holding times

Where standard holding times are exceeded, a discussion, using professional judgement, as to the integrity of the data will be required, taking into account such factors as field storage, laboratory storage and even sample bottle characteristics.

3.1.10 Procedures for anomalous samples and confirmation checking

All results should be checked for discrepancies by the project manager, against the anticipated results and all other results, within 8 hours of receipt of the results from the laboratory.

Any result that is considered by the supervising scientist to be unusually high or at variance with other results is automatically reanalysed. A significantly different result requires immediate remedial action on the whole sample batch (retesting or using an alternative analytical method) at the laboratory's expense.

After appropriate checking by laboratories, all sample analysis results work-sheets, including those of duplicates and replicate analyses, should be checked by the consultant. Once confirmation checking is completed the final laboratory report is issued.

For intra-laboratory duplicates, if one sample has more than two analytes exceeding the data quality objectives, the sample is carefully checked. If the error is not apparent, the sample is rejected. If more than three samples are rejected all the samples collected at that time are rejected. These samples are then re-sampled and reanalysed.

3.2 Field QA/QC

3.2.1 Details of sampling team

Fieldwork was conducted using the following personnel:

- Groundwater well integrity inspection: David James and Jarrod Irving;
- Groundwater well construction and installation: David James, Simon Meich, Shane Furlong and Alan Wade;
- Groundwater well development: Jarrod Irving and Laura Boland;
- Groundwater sampling for chemical analysis: David James, Katy Kijek, Laura Boland and Jarrod Irving; and
- Groundwater physical analysis: David James, Jordan Fraser and Alan Wade.

3.2.2 Groundwater sampling methodology

Groundwater sampling at each existing and newly installed groundwater well was undertaken between 18 and 21 April 2011. Prior to purging, a multi-phase dipper was used to measure the SWL in each well and to assess the presence of LNAPL or DNAPL if any.

Sampling was undertaken via low flow (Micro-purge) sampling techniques, with the pump inlet placed at depths within the screen interval. Purging was continued until field parameters [pH, electrolytic conductivity (EC), oxidation/reduction potential (ORP or pe), dissolved oxygen (DO), temperature and flow rate (yield)] had stabilised (refer to Table 5) and a sustainable sampling flow rate (i.e. minimal draw down) had been established to confirm that a representative sample of the aguifer was collected.



Groundwater well GW4 displayed insufficient yield to sustain an adequate flow rate with minimal drawdown. As such, purging and collection of field parameters was continued using a hand bailer until the well was purged dry and was sampled following adequate recharge.

Groundwater samples were collected in amber glass bottles, volatile vials or plastic bottles depending on the individual analytes and required preservatives, labelled with the groundwater well number, site reference and date before being placed in a cooler with ice. All sampling procedures were undertaken in accordance with Environmental Earth Sciences, 2009, Soil, gas & groundwater sampling manual and EPA Publication 669, 2000, Groundwater sampling guidelines. Decontamination practices included the following:

- use of individual pump bladders and tubing at each groundwater well; and
- washing of all re-used sampling equipment (i.e. pump and steel cable) with detergent (Decon 90) water, double rinsing with clean water prior to collection of each sample.

3.2.3 Sampling controls

Decontamination procedures carried out between sampling events

All sampling equipment to be re-used which came into contact with groundwater or soil samples, were thoroughly washed with detergent (Decon 90 or similar) water, then rinsed with clean water and dried before the collection of each sample. Any items accidentally contaminated were similarly washed before re-use. New nitrile gloves were used at each sampling location.

Individual pump bladders and tubing were used for each groundwater well, reducing the risk of cross contamination. Between each location, the flow cell and water quality metres were rinsed using a mixture of orange based surfactant and distilled water, followed by a rinse with distilled water. Groundwater samples were collected directly from the pump tubing and did not pass through the flow cell. Sampling for groundwater was conducted in the order of least to potentially most chemically impacted.

Sample notation details

The chemical analyses to be performed on each sample are presented on the chain of custody documentation (Appendix C) which also identify for each sample – the sampler, nature of the sample, collection date, analyses to be performed, sample preservation method (if any), departure time from the site and dispatch courier.

Rinsate and trip blanks

The rinsate blank Rinsate-1 (18/04/11), Rinsate-2 (19/04/2011), Rinsate-3 (20/04/2011) and Rinsate-4 (21/04/2011) were collected after washing and triple rinsing the sampling equipment from the final sampling location at the end of each sampling day (i.e. April 2011 GME). No rinstate blank was collected following the sampling of GW07 on 2/5/2011.

Rinsate blanks was analysed for TPH and VOC with all concentrations recorded below laboratory detection limits.

Groundwater trip blank samples Trip-1 (18/04/2011), Trip-2 (19/04/2011), Trip-3 (20/04/2011) and Trip-4 (21/04/2011) were collected from laboratory prepared trips blanks (one trip blank per esky containing volatiles) taken to and returned from the field during each sampling day (i.e. April 2011 GME). No trip blank was taken to and returned from the field during the sampling of GW07 on 2/5/2011.



The trip blanks were analysed for TPH and VOC with all concentrations also recorded below laboratory detection limits.

3.2.3 Field instrument calibration

The following field instruments were calibrated for the groundwater bore development and sampling program. Field calibration was undertaken twice daily are recorded within field note. Field calibration records are presented in Appendix F

TABLE 8 INSTRUMENT CALIBRATION

Meter	Parameter	Calibration
Groundwater Monitoring	Event - 18 April - 21 April 2011	
Hanna HI 92000	pH, temperature	2-point (pH 4.01 & 7.01)
Hanna HI 92000	Eh (redox)	Standard Solution (250 mV)
Hanna HI 92000	EC (electrolytic conductivity)	2-point (2.76 & 12.88 mS/cm)
Hanna HI 92000	Dissolved Oxygen (DO)	2-point (0 & 100% DO)
Groundwater Monitoring	Event - 2 May 2011	
Hanna HI 92000	pH, temperature	2-point (pH 4.01 & 7.01)
Hanna HI 92000	Eh (redox)	Standard Solution (250 mV)
Hanna HI 92000	EC (electrolytic conductivity)	2-point (2.76 & 12.88 mS/cm)
Hanna HI 92000	Dissolved Oxygen (DO)	2-point (0 & 100% DO)

Field equipment used for the groundwater investigation was appropriate for the required works and was used in the appropriate manner. The instruments were calibrated in accordance with the manufacturer specifications and Environmental Earth Sciences VIC QA/QC documentation. Refer to Appendix J of the report for calibration records

3.3 Laboratory QA/QC

Organic and inorganic analysis for this project was completed Australian Laboratory Services (ALS), with the inter-laboratory duplicate sample being analysed by SGS Australia Laboratories. Both laboratories are accredited by NATA for the methods used, details of this accreditation can be viewed at http://www.nata.asn.au/, while details of the samples sent to each laboratory and the analysis requested are contained in the chain of custody documentation held in Appendix C.

Samples were analysed within the appropriate holding times, with the exception to the following:

 ALS EM1104286 – the analysis for pH exceeded the holding time by 6 days for GW42D and SPLIT 4, 7 days for GW03, GW04, GW10, GW11, GW13, GW14, GW15, GW16, GW19, GW21, GW22, GW23, GW24, GW25, GW27, GW36, GW39, GW40, GW41, GW43D, GW44D, DUP 1, SPLIT 1, DUP 3, SPLIT 3 and DUP 4, and 8 days for GW9 and GW12; and



• ALS EM1104286 – the analysis of sulfide exceeded the holding time by 1 day for GW9 and GW12.

Although sulfide exceeded the holding time by 1 day respectively, discussions with ALS conclude that such a breach in holding time is unlikely to adversely affect the analytical results reported.

Similarly, even though the holding times for pH in all samples exceed the allowable holding times, the analysis of CoPC were within the holding times, therefore the exceedence listed above is not considered to affect the quality or integrity of the data presented. Furthermore, pH values correlated with field measurements, demonstrating that the water chemistry had not altered significantly between sampling and analysis.

The detailed internal laboratory QA/QC reports are presented in the laboratory transcripts of Appendix C. The results of the laboratory QC program are summarized below:

- laboratory duplicate tests reported RPDs within acceptable range;
- method blank concentrations were reported below laboratory limit of reporting;
- laboratory control spike reported recoveries within the acceptable range, with exception to vinyl chloride (ALS EM1104104 Amendment 1) which recorded a recovery of 59.6% (less than the lower recovery limit of 61%);
- matrix spike reported recoveries within the acceptable range, with exception to the following:
 - 1.1-dichloroethene (ALS EM1104104 Amendment 1) which recorded a recovery of 107% (more than the upper recovery limit of 104%);
 - o sulfate (ALS EM1104104 Amendment 1, ALS EM1104161 Amendment 1, ALS EM1104286 Amendment 1 and ALS EM1104593 Amendment 1) spike recovery was not determined:
 - o nitrate and nitrite (ALS EM1104104 Amendment 1, ALS EM1104161 Amendment 1 and ALS EM1104286 Amendment 1) spike recovery was not determined;
 - chloride (ALS EM1104286 Amendment 1) spike recovery was not determined;
 and
 - o 1.1-dichloroethene (ALS EM1104286 Amendment 1) which recorded a recovery of 119% (more than the upper recovery limit of 104%).
- surrogates reported recoveries within the acceptable range.

Overall, SGS and ALS internal laboratory QA/QC results demonstrate that the laboratory QA/QC program was satisfactory for the groundwater investigation. Although it is noted that the one parameter of the laboratory control spike and ten parameters of the matrix spike did not meet the acceptable range, this is considered insignificant compared to the number of parameters, reported in multiple laboratory transcripts, which did meet the acceptable range.

The overall rate of internal laboratory QA/QC performed is considered acceptable to achieve reliability on the results used to reach the conclusions.



3.3.1 Duplicate sampling

Duplicate samples were collected at a rate of one duplicate per twenty samples collected (5%) during the groundwater investigation. Intra- and inter-laboratory duplicate analysis results are presented in Table 2 and Table 3.

For this project, 39 primary groundwater samples were analysed with four groundwater intraand four inter-laboratory duplicates were collected during fieldwork, however confusion during sample laboratory sorting resulted in seven intra-laboratory and one inter-laboratory samples being analysed. Intra- and inter-laboratory duplicates were analysed for:

- pH, TDS, free CN, Na⁺, Ca²⁺, Mg²⁺, K⁺, NH⁴⁺, Cl⁻, SO₄²⁻, HCO₃⁻, NO₃⁻, NO₂⁻, PO₄³⁻, F⁻;
- heavy metals (Al, As, Cd, Cu, CrVI, Fe, Pb, Ni, Zn, Co, Se, Bo, Mn and Hg);
- total petroleum hydrocarbons (TPH fractions C₆-C₃₆);
- polycyclic aromatic hydrocarbons (PAH); and
- volatile organic compounds (VOC) including naphthalene by VOC.

Although, the number of inter-laboratory duplicates is not considered acceptable for the project, Environmental Earth Sciences did initially intend to analyse an acceptable number of inter-duplicates. The analysis of seven intra-laboratory duplicates and one inter-laboratory duplicate was a result of a laboratory error. Nevertheless, a review of the data presented in Table 4 and 5 suggests that the data obtained from SGS is reliable compared to the primary laboratory (ALS) with only two parameters reported with a RPD > 50%, however when compared against Table 1 MDQI criteria, all results are acceptable. Environmental Earth Sciences will ensure the correct number of intra- and inter-laboratory duplicates are collected and analysed during future GMEs (if any).

TABLE 2 GROUNDWATER INORGANIC INTRA - LABORATORY DUPLICATE QA/QC RESULTS

Analyto	2	GW3	DUP1	\°C00	GW3	SPLIT 1*	\oud-	GW28	DUP2	\ ₀ CQQ	GW24	DUP3	\°C00	GW24	SPLIT 3*	\ ₀ Cqq	GW42D	DUP4	RPD G	GW42D SF	SPLIT 4*
Allalyte		20/04/11 2	20/04/11		20/04/11	20/04/11	% 2 2	19/04/11	19/04/11	° C	20/04/11	20/04/11	% D	20/04/11	20/04/11	% 2 2 3	20/04/11	20/04/11		20/04/11 20	20/04/11
pH Value	0.01	9.9	6.49	1.7	9.9	6.4	3.1	7.65	7.66	0.1	7.25	7.34	1.2	7.25	7.31	0.8	6.3	6.22	1.3	6.3	6.29
TDS	2	3410	3270	4.2	3410	3100	9.5	1540	1600	3.8	4430	4170	0.9	4430	4340	2.1	23400	22600	3.5	23400 2	21500
Bicarbonate	-	295	224	27.3	295	226	26.4	447	443	0.8	828	831	0.3	828	833	9.0	174	165	5.3	174	170
Sulfate	-	2070	2140	3.3	2070	1950	0.9	167	180	7.5	2340	2710	14.7	2340	2470	5.4	14800	14800	0.0	14800	15000
Sulphide	0.1	<0.1	<0.1	pu	<0.1	<0.1	pu	<0.1	<0.1	pu	<0.1	<0.1	pu	<0.1	<0.1	pu	<0.1	<0.1	pu	<0.1	<0.1
Chloride	-	64	99	3.1	64	25	0.0	332	330	9.0	42	43	2.4	42	46	9.1	3380	2620	25.3	3380	2920 14.6
Calcium	-	232	246	5.9	232	243	4.6	30	33	9.5	55	20	9.5	22	47	15.7	375	396	5.4	375	386
Magnesium	-	43	46	6.7	43	45	4.5	26	27	3.8	38	36	5.4	38	35	8.2	787	812	3.1	787	785
Sodium	-	62	02	12.1	62	89	9.2	351	360	2.5	29	22	16.1	29	55	19.7	2450	2580	5.2	2450	2450
Potassium	-	16	16	0.0	16	15	6.5	9	9	0.0	21	16	27.0	21	16	27.0	217	224	3.2	217	216
Free Cyanide	0.004	0.005	0.007	33.3	0.005	0.014	94.7	<0.004	<0.004	pu	0.01	0.01	0.0	0.01	0.011	9.5	0.013	0.016	20.7	0.013	0.021 47.1
Total Cyanide	0.004	70.0	0.07	0.0	0.07	0.072	2.8	0.033	0.032	3.1	0.219	0.253	14.4	0.219	0.211	3.7	0.434	0.509	15.9	0.434 (0.456
WAD Cyanide	0.004	600.0	0.016	96.0	600.0	0.014	43.5	<0.004	<0.004	pu	0.021	0.021	0.0	0.021	0.024	13.3	0.044	0.046	4.4	0.044	0.037 17.3
Fluoride	0.1	1.3	1.1	16.7	1.3	1.1	16.7	4.1	4.1	0.0	0.3	0.3	0.0	0.3	0.3	0.0	-	-	0.0	-	-
Ammonia as N	0.01	099	452	37.4	099	460	35.7	76.3	87.7	13.9	854	1000	15.7	854	1020	17.7	2170	2100	3.3	2170	2160
Nitrite as N	0.01	<0.01	<0.01	pu	<0.01	<0.01	pu	0.01	0.11	166.7	0.02	0.04	2.99	0.02	0.02	0.0	0.02	0.05	85.7	0.02	0.02
Nitrate	0.01	<0.04	<0.04	pu	<0.0>	<0.04	pu	<0.04	<0.04	pu	23.7	17.45	30.4	23.7	16.4	36.4	<0.04	40.0>	pu	<0.04	0.04
Nitrogen	0.01	<0.01	<0.01	pu	<0.01	<0.01	pu	<0.01	<0.01	pu	5.37	3.98	30	5.37	3.74	36	0.03	0.05	90	003	0.04
Phosphate	0.01	<0.03	<0.03	pu	<0.03	<0.03	pu	<0.03	<0.03	pu	<0.03	<0.03	pu	<0.03	<0.03	pu	<0.03	<0.03	pu	<0.03	<0.03
Aluminium	0.01	<0.01	<0.01	pu	<0.01	<0.01	pu	<0.01	0.02	pu	<0.01	<0.01	pu	<0.01	<0.01	pu	3.91	3.15	21.5	3.91	3.02 25.7
Arsenic	0.001	0.01	0.012	18.2	0.01	0.01	0.0	0.189	0.201	6.2	0.039	0.041	5.0	0.039	0.043	9.8	0.031	0.025	21.4 0	0.031	0.025 21.4
Cadmium	0.0001	<0.0001	<0.0001	pu	<0.0001	<0.0001	pu	<0.0001	<0.0001	pu	<0.0001	<0.0001	pu	<0.0001	<0.0001	pu	0.0012	0.0013	8.0 0	0.0012 0	0.0013
Cobalt	0.001	0.021	0.024	13.3	0.021	0.024	13.3	<0.001	<0.001	pu	0.001	0.002	2.99	0.001	0.002	2.99	99.6	9.63	0.3	99.6	9.37
Copper	0.001	0.001	0.001	0.0	0.001	0.001	0.0	0.002	0.001	2.99	0.004	0.004	0.0	0.004	0.003	28.6	0.051	0.048	6.1	0.051 (0.045 12.5
Lead	0.001	<0.001	<0.001	pu	<0.001	<0.001	pu	0.003	0.004	28.6	0.002	0.001	2.99	0.002	0.002	0.0	0.002	0.001	0 2.99	0.002	<0.001
Manganese	0.001	4.18	4.03	3.7	4.18	3.88	7.4	0.17	0.169	9.0	0.019	0.021	10.0	0.019	0.02	5.1	120	121	8.0	120	118
Nickel	0.001	0.014	0.02	35.3	0.014	0.007	2.99	0.014	0.01	33.3	0.012	0.013	8.0	0.012	0.015	22.2	2.82	2.84	0.7	2.82	2.81
Selenium	0.01	<0.01	<0.01	pu	<0.01	<0.01	pu	<0.01	<0.01	pu	<0.01	<0.01	pu	<0.01	<0.01	pu	0.03	0.03	0.0	0.03	0.03
Zinc	0.005	0.017	0.071	122.7	0.017	0.013	26.7	<0.005	0.005	pu	0.013	0.012	8.0	0.013	0.013	0.0	2.2	2.16	1.8	2.2	2.15
Boron	0.05	1.3	1.37	5.2	1.3	1.39	6.7	0.74	0.78	5.3	0.32	0.33	3.1	0.32	0.34	6.1	99.0	99.0	0.0	99.0	0.67
Iron	0.05	27	21.7	21.8	27	20.6	26.9	<0.05	<0.05	pu	0.13	0.1	26.1	0.13	0.11	16.7	12.9	12.8	8.0	12.9	12.4
Mercury	0.0001	<0.0001	<0.0001	pu	<0.0001	<0.0001	pu	<0.0001	<0.0001	pu	<0.0001	<0.0001	pu	<0.0001	<0.0001	pu	0.0002	<0.0001	0 pu	0.0002 <(<0.0001
Chromium VI	0.01	<0.01	<0.01	pu	<0.01	<0.01	pu	<0.01	<0.01	pu	<0.01	<0.01	pu	<0.01	<0.01	pu	<0.01	<0.01	pu	<0.01	<0.01

MDL = method detection limit

**No groundwater intra-naboratory duplicates were collected during fieldwork, however confusion during sample laboratory sorting resulted seven intra-laboratory and one inter-laboratory duplicates were analysed by ALS laboratories) rather than inter-laboratory duplicates as the sample normenclature suggests

- = not analysed

- = not analys - 2 e, 4, e, e, ⊢, ε,

some laboratory results have been converted to allow for the comparison against guidelines: Nitrate as N to Nitrate NO₃= (x 4.43), Reactive Phosphorous P to Phosphate PO₄ (x 3.06), Total Alkalinity as CaCO3 to Bicarbonate HCO₃ (x 1.219) Acceptance Criteria (see Table 1)

**O initial applies to <5x M LO.

210074- Appendix D-QAQC V2

D15

D16

က
Ę
⋽
က္သ
뿠
<u>.</u>
ă
₹
a
···
世
`~
ರ
J
로
글
ᆫ
⋩
눔
ĭ
≾
ድ
ပ္က
7
Ĭ
Ξ
RA - LA
NTRA - L
: INTRA - L
: INTRA - L
C INTRA - L
NIC INTRA - L
NIC INTRA - L
ORGANIC INTRA – L
NIC INTRA - L
ORGANIC INTRA – L
ORGANIC INTRA – L
ORGANIC INTRA – L
ORGANIC INTRA – L
ORGANIC INTRA – L
ORGANIC INTRA – L
OUNDWATER ORGANIC INTRA - L
ORGANIC INTRA – L
ROUNDWATER ORGANIC INTRA – L
ROUNDWATER ORGANIC INTRA – L
GROUNDWATER ORGANIC INTRA – L
E 3 GROUNDWATER ORGANIC INTRA – L
GROUNDWATER ORGANIC INTRA – L

A	0	GW3 D	DUP1) 0	GW3	SPLIT F	RPD%	GW28	DUP2	\odds	GW24	DUP3	\one \one \one \one \one \one \one \one	GW24	SPLIT 3*) 0	GW42D	DUP4) 0 0	GW42D	SPLIT 4*) C
Alialyte		20/04/11 20/	20/04/11		20/04/11 2	20/04/11		19/04/11	19/04/11		20/04/11	20/04/11		20/04/11	20/04/11		20/04/11 2	20/04/11		20/04/11	20/04/11	% م ا
Oxygenated Compounds																						
2-Butanone (MEK)	20	<20	<50	pu	<50	<50	pu	<50	<50	pu	<1000	<1000	pu	<1000	<1000	pu	<50	<50	pu	<50	<50	pu
Halogenated Aromatic Compounds	-	-	-		-			-			-			-			-	-		-		
Chlorobenzene	c)	² 2	<5 <5	pu	\S	<5	pu	<5	^	pu	<100	<100	pu	<100	<100	pu	8	80	0	80	80	0
Chlorinated Hydrocarbons																						
Chloroform	2	<5	<5	pu	\$	<5	pu	<5	%	pu	<100	<100	pu	<100	<100	pu	<5	2	pu	\$	<5	pu
Tetrachloroethene	2	\$2	<5	pu	\$	×5	pu	×5	\$5	pu	<100	<100	pu	<100	<100	pu	<5	2	pu	\$	×5	pu
Polynuclear Aromatic Hydrocarbons (PAH)	(PAH)	-	-		-			-			-			-			-	-		-		
Naphthalene	c)	² 2	4.1	pu	1.2	1.6	28.6	<5	^	pu	4,530	2980	41.3	1,820	2710	39.3	33	25.5	25.6	21.3	27.3	24.7
Acenaphthylene	-	<1.0	<1.0	pu	<1.0	<1.0	pu	0.1>	0.1.0	pu	58.1	23.9	83.4	58.1	<10.0	pu	<1.0	<1.0	pu	0.1.0	<1.0	pu
Acenaphthene	-	<1.0	<1.0	pu	0.1>	<1.0	pu	0.1>	<1.0	pu	<10.0	<10.0	pu	<10.0	14.6	pu	<1.0	<1.0	pu	<1.0	<1.0	pu
Fluorene	-	-	<1.0	pu	-	<1.0	pu	0.1>	<1.0	pu	20.2	15.4	27.0	20.2	<10.0	pu	<1.0	<1.0	pu	<1.0	<1.0	pu
Phenanthrene	-	3.4	<1.0	pu	3.4	<1.0	pu	0.1>	0.1.0	pu	<10.0	<10.0	pu	<10.0	<10.0	pu	<1.0	<1.0	pu	<1.0	<1.0	pu
Anthracene	-	1.1	<1.0	pu	1.1	<1.0	pu	0.1>	0.1.0	pu	<10.0	<10.0	pu	<10.0	<10.0	pu	<1.0	<1.0	pu	0.1.0	<1.0	pu
Fluoranthene	-	2.4	<1.0	pu	2.4	<1.0	pu	0.1>	<1.0	pu	<10.0	<10.0	pu	<10.0	<10.0	pu	<1.0	<1.0	pu	<1.0	<1.0	pu
Pyrene	-	2	<1.0	pu	2	<1.0	pu	0.1>	0.1>	pu	<10.0	<10.0	pu	<10.0	<10.0	pu	<1.0	<1.0	pu	<1.0	<1.0	pu
Benz(a)anthracene	-	<1.0	<1.0	pu	<1.0	<1.0	pu	0.1>	0.1>	pu	<10.0	<10.0	pu	<10.0	<10.0	pu	<1.0	<1.0	pu	<1.0	<1.0	pu
Chrysene	-	<1.0	41.0	pu	<1.0	0.1.0	pu	0.1.0	0.1.0	pu	<10.0	<10.0	pu	<10.0	<10.0	pu	<1.0	<1.0	pu	0.1.0	<1.0	pu
Benzo(b)fluoranthene	-	<1.0	<1.0	pu	<1.0	<1.0	pu	<1.0	<1.0	pu	<10.0	<10.0	pu	<10.0	<10.0	pu	<1.0	<1.0	pu	<1.0	<1.0	pu
Benzo(k)fluoranthene	-	<1.0	<1.0	pu	<1.0	<1.0	pu	<1.0	<1.0	pu	<10.0	<10.0	pu	<10.0	<5.5	pu	<1.0	<1.0	pu	<1.0	<1.0	pu
Benzo(a)pyrene	0.5	> 0.0>	9.0>	pu	9.0>	9.0>	pu	<0.5	<0.5	pu	5.6	5.6	0.0	<5.6	<10.0	pu	<0.5	9.0>	pu	<0.5	9.0>	pu
Indeno(1.2.3.cd)pyrene	-	<1.0	<1.0	pu	<1.0	<1.0	pu	<1.0	<1.0	pu	<10.0	<10.0	pu	<10.0	<10.0	pu	<1.0	<1.0	pu	<1.0	<1.0	pu
Dibenz(a.h)anthracene	-	<1.0	<1.0	pu	<1.0	<1.0	pu	<1.0	<1.0	pu	<10.0	<10.0	pu	<10.0	<10.0	pu	<1.0	<1.0	pu	<1.0	<1.0	pu
Benzo(g.h.i)perylene	-	<1.0	<1.0	pu	<1.0	1.6	pu	<1.0	<1.0	pu	<10.0	<10.0	pu	<10.0	2760	pu	<1.0	<1.0	pu	<1.0	27.3	pu
Monocyclic Aromatic Hydrocarbons																						
Styrene	2	<5	<5	pu	\$	<5	pu	<5	₹2	pu	193	196	1.5	193	205	0.9	<5	<5	pu	\2	<5	pu
1.2.4-Trimethylbenzene	2	<5	<5	pu	~ 22	<5	pu	<5	V 2	pu	185	205	10.3	185	220	17.3	<5	<5	pu	<2	<5	pu
втех																						
Benzene	-	2	8	40.0	2	က	40.0	<u>^</u>	₹	pu	6,350	5,340	17.3	6,350	5,250	19.0	355	334	6.1	355	364	2.5
Toluene	7	<2	е	pu	%	ю	pu	4	8	pu	318	282	12.0	318	287	10.2	61	63	3.2	19	62	1.6
Ethylbenzene	2	~	8	pu	8	က	pu	<2 <	8	pu	111	116	4.4	111	119	7.0	က	က	0.0	8	8	0.0
meta- & para-Xylene	2	3	9	2.99	က	9	2.99	<2	25	pu	1,550	1,560	9.0	1,550	1,600	3.2	11	11	0.0	11	10	9.5
ortho-Xylene	2	<2	4	pu	♡	4	pu	<2	5	pu	739	728	1.5	739	992	3.6	6	6	0.0	6	6	0.0

TABLE 3 GROUNDWATER ORGANIC INTRA – LABORATORY DUPLICATE QA/QC RESULTS (CONTINUED)

Analyte	LoR	GW3	DUP1	RPD%	GW3	SPLIT 1*	RPD%	GW28	DUP2	RPD%	GW24	DUP3	RPD%	GW24	SPLIT 3*	RPD%	GW42D	DUP4	RPD%	GW42D	SPLIT 4*	RPD%
		20/04/11	20/04/11		20/04/11 2	20/04/11		19/04/11	19/04/11		20/04/11	20/04/11		20/04/11	20/04/11		20/04/11	20/04/11		20/04/11	20/04/11	
Total Petroleum Hydrocarbons (TPH)																						
TPH C ₆ - C ₉ Fraction	20	<20	30	pu	<20	40	pu	<20	<20	pu	9780	066'6	2.1	9780	10,200	4.2	470	480	2.1	470	460	2.2
TPH C ₁₀ - C ₁₄ Fraction	20	420	480	13.3	420	530	23.2	<50	<50	pu	14,200	14,200	0.0	14,200	12,400	13.5	2,960	2,910	1.7	2,960	3,070	3.6
TPH C ₁₅ - C ₂₈ Fraction	100	1,440	1410	2.1	1,440	1,480	2.7	<100	<100	pu	6,120	5,510	10.5	6,120	4,760	25.0	1,560	1,500	3.9	1,560	1,880	18.6
TPH C ₂₉ - C ₃₆ Fraction	20	150	230	42.1	150	180	18.2	<50	<50	pu	220	150	37.8	220	140	44.4	200	200	0.0	200	280	33.3
TPH C ₁₀ - C ₃₆ Fraction (sum)	20	2,010	2120	5.3	2,010	2,190	9.8	<50	<50	pu	20,500	19,900	3.0	20,500	17,300	16.9	4,720	4,610	2.4	4,720	5,230	10.3
Total Recoverable Hydrocarbons (TRH)																						
TRH C ₆ – C ₁₀ Fraction	20	<20	20	pu	<20	20	pu	<20	<20	pu	9720	9930	2.1	9720	10100	3.8	480	480	0	480	470	2.1
TRH C ₆ – C ₁₀ Fraction minus BTEX	20	<20	30	pu	<20	30	pu	<20	<20	pu	<2000	<2000	pu	<2000	2080	pu	40	09	40	40	20	9.99
>TRH C ₁₀ - C ₁₆ Fraction	100	610	710	15.1	610	790	25.7	<100	<100	pu	14600	14200	2.7	14600	12200	17.9	1750	1700	2.8	1750	1840	5.0
>TRH C ₁₆ - C ₃₄ Fraction	100	1300	1320	1.5	1300	1340	3.0	<100	<100	pu	4670	4320	7.7	4670	3740	22.1	1410	1370	2.8	1410	1760	22.0
>TRH C ₃₄ – C ₄₀ Fraction	100	<100	190	pu	<100	130	pu	<100	<100	pu	<100	<100	pu	<100	<100	pu	110	100	9.5	110	180	48.2
>TRH C ₁₀ – C ₄₀ Fraction (sum)	100	1910	2220	15.0	1910	2260	16.7	<100	<100	pu	19300	18500	4.2	19300	15900	19.3	3270	3170	3.1	3270	3780	14.4

Note(s):

the table above) are intra-laboratory duplicates were collected during fieldwork, however confusion during sample laboratory sorting resulted seven intra-laboratory samples being analysed. Hence, samples labelled SPLIT 1, SPLIT 3 and SPLIT 4 (in the table above) are intra-laboratory duplicates (as they were analysed by ALS laboratories) rather than inter-laboratory duplicates as the sample nomenclature suggests

2. RPP relative percentage difference
3. nd = RPP not calculable
4. all units in ug/L
5. Acceptance Criteria (see Table 1)

• Acceptance Criteria (see Table 1)

• An or light spriles to <\$M.DL); and

• An or light spriles to <\$M.DL); and

• 50% for medium to high level (>10 x MDL).

D17



TABLE 4 **GROUNDWATER INORGANIC INTER - LABORATORY DUPLICATE QA/QC RESULTS**

Analysis	1.00	GW28	SPLIT 2	DDD0/
Analyte	LOR	19/04/11	19/04/11	RPD%
pH Value	0.01	7.65	7.8	1.9
TDS	5	1540	920	50.4
Bicarbonate	1	447	475	6.0
Sulfate	1	167	200	18.0
Sulfide	0.1	<0.1	0.5	133
Chloride	1	332	300	10.1
Calcium	1	30	32	6.5
Magnesium	1	26	24	8.0
Sodium	1	351	240	37.6
Potassium	1	6	6.8	12.5
Free Cyanide	0.004	<0.004	0.016	nd
Total Cyanide	0.004	0.033	0.029	12.9
WAD Cyanide	0.004	<0.004	0.009	nd
Fluoride	0.1	1.4	1.1	24.0
Ammonia as N	0.01	76.3	-	nd
Nitrite as N	0.01	0.01	0.005	66.7
Nitrate	0.01	<0.04	<0.04	nd
Phosphate	0.01	<0.03	<0.005	nd
Aluminium	0.01	<0.01	0.041	nd
Arsenic	0.001	0.189	0.19	0.5
Cadmium	0.0001	<0.0001	<0.0001	nd
Cobalt	0.001	<0.001	<0.001	nd
Copper	0.001	0.002	<0.001	nd
Lead	0.001	0.003	<0.001	nd
Manganese	0.001	0.17	0.19	11.1
Nickel	0.001	0.014	0.009	43.5
Selenium	0.01	<0.01	<0.002	nd
Zinc	0.005	<0.005	0.003	nd
Boron	0.05	0.74	0.70	5.6
Iron	0.05	<0.05	0.59	nd
Mercury	0.0001	<0.0001	<0.0005	nd
Chromium VI	0.01	<0.01	<0.005	nd

Note(s):

- MDL = method detection limit
- = not analysed
- RPD = relative percentage difference nd = RPD not calculable 3.
- all units in mg/L
- some laboratory results have been converted to allow for the comparison against guidelines: Nitrate as N to Nitrate NO₃= (x 4.43), Total Alkalinity as CaCO3 to Bicarbonate HCO₃ (x 1.219)
- Acceptance Criteria (see Table 1)
 - no limit applies to <5x MDL;
 - 80-150% for low level ($5x 10 \times MDL$); and
 - 50-130% for medium to high level (>10x MDL).



TABLE 5 **GROUNDWATER ORGANIC INTER – LABORATORY DUPLICATE QA/QC RESULTS**

		GW28	SPLIT 2	
Analyte	LOR	19/04/11	19/04/11	RPD%
Oxygenated Compounds	1	1		
2-Butanone (MEK)	50	<50	<50	nd
Chlorinated Hydrocarbons				
Tetrachloroethene	0.5	<5	2.1	nd
Polynuclear Aromatic Hydrocarbons (PAH)				
Naphthalene	1/0.2*	<1.0	<0.2	nd
Acenaphthylene	1/0.2*	<1.0	<0.2	nd
Acenaphthene	1/0.2*	<1.0	<0.2	nd
Fluorene	1/0.2*	<1.0	<0.2	nd
Phenanthrene	1/0.2*	<1.0	<0.2	nd
Anthracene	1/0.2*	<1.0	<0.2	nd
Fluoranthene	1/0.2*	<1.0	<0.2	nd
Pyrene	1/0.2*	<1.0	<0.2	nd
Benz(a)anthracene	1/0.2*	<1.0	<0.2	nd
Chrysene	1/0.2*	<1.0	<0.2	nd
Benzo(b)fluoranthene	1/0.2*	<1.0	<0.2	nd
Benzo(k)fluoranthene	1/0.2*	<1.0	<0.2	nd
Benzo(a)pyrene	0.5/0.2*	<0.5	<0.2	nd
Indeno(1.2.3.cd)pyrene	1/0.2*	<1.0	<0.2	nd
Dibenz(a.h)anthracene	1/0.2*	<1.0	<0.2	nd
Benzo(g.h.i)perylene	1/0.2*	<1.0	<0.2	nd
Monocyclic Aromatic Hydrocarbons				
Styrene	5	<5	<5	nd
1.2.4-Trimethylbenzene	5	<5	<5	nd
ВТЕХ				
Benzene	1	<1	<1	nd
Toluene	2	<2	<2	nd
Ethylbenzene	2	<2	<2	nd
meta- & para-Xylene	2	<2	<2	nd
ortho-Xylene	2	<2	<2	nd
Total Petroleum Hydrocarbons (TPH)				
TPH C ₆ - C ₉ Fraction	20	<20	<20	nd
TPH C ₁₀ - C ₁₄ Fraction	50	<50	<50	nd
TPH C ₁₅ - C ₂₈ Fraction	100	<100	260	nd
TPH C ₂₉ - C ₃₆ Fraction	50	<50	<50	nd
TPH C ₁₀ - C ₃₆ Fraction (sum)	50	<50	<50	nd

Note(s):

- 1. MDL = method detection limit
- = not analysed
- 2. RPD = relative percentage difference



- 4. nd = RPD not calculable

- 4. III RFD Not calculable
 5. * = SGS LORs for PAHs
 6. all units in ug/L
 7. Acceptance Criteria (see Table 1)

 - no limit applies to <5x MDL
 80-150% for low level (5x 10 x MDL)
 50-130% for medium to high level (>10x MDL)



3.3.2 Groundwater relative percentage difference values

Table 2 and 3 indicated that all RPD's calculated for intra-laboratory duplicates were all within an acceptable range (≤50%), with the exception to the following:

- acenaphthylene GW24/DUP3 recorded RPD of 83.4%;
- meta & para xylene GW3/DUP1 recorded RPD of 66.7%;
- TRP C6-C10 fraction minus BTEX GW42D/SPLIT 4 recorded RPD of 66.6%; and
- meta & para xylene GW3/SPLIT 1 recorded RPD of 66.7%.

When compared against Table 1 MDQI criteria, all results are acceptable.

Table 4 and 5 indicated that all RPD's calculated for the inter-laboratory duplicate was within an acceptable range (≤50%), with the exception to the following:

- TDS GW28/SPLIT2 recorded RPD of 50.4%; and
- nitrite GW28/DUP2 recorded RPD of 66.67%.

When compared against Table 1 MDQI criteria, all results are acceptable.

3.4 QA/QC data evaluation

Based on information presented in Sections 3.1, 3.2, 3.3 and 3.4 it can be confidently stated that the MDQO's for this project have been met and the data set is considered to be reliable.

4 REFERENCES

APHA 1995, Standard methods for the examination of water and waste-water 19th edition.

- Australian and New Zealand Environment and Conservation Council (ANZECC) 1992, Australian and New Zealand Guidelines for the assessment and management of contaminated sites Australia and New Zealand Environment Council, National Health and Medical Research Council, Melbourne, Victoria.
- Environmental Earth Sciences Pty Ltd 2009, *Soil, gas and groundwater sampling manual,* unpublished.
- EPA Victoria 2009, Industrial Waste Resource Guidelines (IWRG) *Publication IWRG701, sampling and analysis of waters, wastewaters, soils and wastes.*
- EPA Victoria 2000, *Groundwater sampling guidelines EPA Information Bulletin. Publication* 669.
- ISO Standards 1995, Quality management and quality assurance ISO8402.
- National Environment Protection Council (NEPC) 1999, National environment protection (assessment of site contamination) measure.
- Rayment & Higginson 1992, Australian laboratory handbook of soil and water chemical methods.



Standards Australia 2005, Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds, AS 4482.1.

Standards Australia, 1999, Guide to the investigation and sampling of sites with potentially contaminated soil, Part 2: Volatile Substances, AS 4482.1.



APPENDIX E DEED OF AGREEMENT

140 William Street Melbourne Vic 3000 PO Box 4301 Melbourne Vic 3001 Australia DX 147 Melbourne Tel +61 3 9274 5000 Fax +61 3 9274 5111 www.dlaphillipsfox.com

Deed of Agreement Groundwater and Gasworks Arts Park, Albert Park

City of Port Phillip Melbourne Water South East Water

> DLA Phillips Fox is a member of DLA Piper Group, an alliance of independent legal practices. It is a separate and distinct legal entity.

> DLA Phillips Fox offices are located in Adelaide Auckland Brisbane Canberra Melbourne Perth Sydney and Wellington.



Table of contents

Parti	es	1
Back	groundground	1
Oper	ative provisions	1
1	City of Port Phillip obligations	1
2	Melbourne Water obligations	
3	South East Water Obligations	3
4	Notices	
City	of Port Phillip	4
Melb	ourne Water	4
Sout	h East WaterChange of address or fax number	4
5	Miscellaneous Commencement of Agreement Ending of Agreement No fettering of Council's powers Release No waiver Severability	5 5 5
6	Definitions and interpretation Definitions Interpretation	6
Exec	ution and date	8
Attac	hments	10
Locat	tion Plan	10



Parties

City of Port Phillip of St Kilda Town Hall, 99a Carlisle Street, St Kilda 3182 (Council)

Melbourne Water of 100 Wellington Parade, East Melbourne (Melbourne Water)

South East Water ABN 89 066 902 547 of 20 Corporate Drive Heatherton, Victoria 3202 (**South East Water**)

Background

- A Council is partly the owner and partly the Committee of Management for the Gasworks Site.
- B Melbourne Water is responsible for the South Yarra Main and Hobsons Bay Main pursuant to the *Water Act 1989*.
- C South East Water is responsible for the Pickles Street Branch Sewer pursuant to a licence issued under Division 1 of Part 2 of the *Water Industry Act* 1994.
- D The Parties enter into this Agreement to:
 - (a) to ensure that Council is provided with notice of any works to the South Yarra Main Hobsons Bay Main and Pickles Street Branch Sewer;
 - (b) to achieve and advance the objectives of the Act in respect of the Gasworks Site.

Operative provisions

1 City of Port Phillip obligations

- 1.1 Council agrees that it will:
 - 1.1.1 prepare a Monitoring Plan and submit it to Melbourne Water and South East Water for approval;
 - 1.1.2 continue to monitor groundwater contamination at and in the vicinity of the South Yarra Main, Hobsons Bay Main and Pickles Street Branch Sewers in accordance with the Monitoring Plan;
 - 1.1.3 supply data relating to groundwater recorded or obtained in the course of implementing the Monitoring Plan to Melbourne Water and South East Water;
 - 1.1.4 notify Melbourne Water and South East Water of any groundwater changes in accordance with the Monitoring Plan;



1.1.5 have and implement a contingency plan to manage the contamination risks posed by groundwater to meet EPA requirements should Melbourne Water or South East Water undertake work to its sewer which increases risks associated with groundwater contamination from the site to an unacceptable level.

2 Melbourne Water obligations

Specific obligations

- 2.1 Melbourne Water acknowledges that:
 - 2.1.1 groundwater from the Gasworks Site enters the South Yarra Main and Hobsons Bay Main and acknowledges that those mains act as a control for the groundwater.
 - 2.1.2 it has received:
 - (a) Golder Associates Pty Ltd reports 018 and 019 (Golder reports);
 - (b) email from Ian Kluckow dated 11 July 2008 to Paul Bolger at GHD and Venetia Stewart of GHD regarding SEPP W Model -Gasworks Park;
 - (c) letter from GHD to Ian Kluckow dated 24 July 2008 regarding South Melbourne Gasworks Audit; and
 - (d) letter from Golder Associates to Paul Bolger of GHD dated 30
 July 2008 in response to comments on the Groundwater
 Modelling Gasworks Park Precinct.

2.2 Melbourne Water agrees that:

- 2.2.1 it will accept groundwater from the Gasworks Site into the South Yarra Main and Hobsons Bay Main provided that it maintains the right acting reasonably, not to accept the groundwater if it is found to interfere with the operation or maintenance of its assets or does not comply with trade waste requirements or safety requirements imposed by the Victorian Government from time to time;
- 2.2.2 it will not unreasonably withhold its approval of the Monitoring Plan submitted by Council in accordance with Clause 1.1.1;
- 2.2.3 it will, subject to Clause 3.2.4, provide Council with eight weeks written notice before commencing any works to the South Yarra Main or Hobsons Bay Main, accompanied by a plan showing the particulars of the proposed works;
- 2.2.4 in the event that emergency works are required to the South Yarra Main or Hobsons Bay Main, it will provide Council with notification as soon as possible after the commencement of the works.



3 South East Water Obligations

- 3.1 South East Water acknowledges that:
 - 3.1.1 groundwater from the Gasworks Site enters the Pickles Street Branch Sewer and acknowledges that the Pickles Street Branch Sewer acts as a control for the groundwater.
 - 3.1.2 it has received:
 - (a) Golder Associates Pty Ltd reports 018 and 019 (Golder reports);
 - (b) email from Ian Kluckow dated 11 July 2008 to Paul Bolger at GHD and Venetia Stewart of GHD regarding SEPP W Model -Gasworks Park;
 - (c) letter from GHD to Ian Kluckow dated 24 July 2008 regarding South Melbourne Gasworks Audit; and
 - (d) letter from Golder Associates to Paul Bolger of GHD dated 30 July 2008 in response to comments on the Groundwater Modelling Gasworks Park Precinct.

3.2 South East Water agrees that:

- 3.2.1 it will accept groundwater that enters the Gasworks Site into the Pickles Street Branch Sewer provided that it maintains the right acting reasonably not to accept the groundwater if it is found to interfere with the operation or maintenance of its assets;
- 3.2.2 it will not unreasonably withhold its approval of the Monitoring Plan submitted by Council in accordance with Clause 1.1.1;
- 3.2.3 it will, subject to Clause 4.2.4, provide Council with eight weeks written notice before commencing any works to the Pickles Street Branch Sewer, accompanied by a plan showing the particulars of the proposed works;
- 3.2.4 in the event that emergency works are required to the Pickles Street Branch Sewer, it will provide Council with notification as soon as possible after the commencement of the works, but no later than the following business day.

4 Notices

Service

- 4.1 Any notice or communication given to a party under this deed is only given if it is in writing and sent in one of the following ways:
 - 4.1.1 Delivered or posted to that party at its address and marked for the attention of the relevant department or officer (if any) set out below.



4.1.2 Faxed to that party at its fax number and marked for the attention of the relevant department or officer (if any) set out below.

City of Port Phillip

Name:

Sam Hewett

Address:

Private Bag 3, St Kilda VIC 3182

Fax number:

9536 2750

Email address:

shewett@portphillip.vic.gov.au

Attention:

Sam Hewett

Melbourne Water

Name:

Jane Denton Corporate Secretary & Legal Counsel

Melbourne Water

Address:

PO Box 4342

Fax number:

9235 2190

Email address:

Jane.Denton@melbournewater.com.au

Attention:

Corporate Secretary

South East Water

Name:

Steve Muir

Address:

40 Commercial Drive, Lynbrook VIC 3975

Fax number:

8788 4132

Email address:

steve.muir@sewl.com.au

Attention:

Steve Muir

Change of address or fax number

4.2 If a party gives the other party three business days notice of a change of its address or fax number, any notice or communication is only given by that other party if it is delivered, posted or faxed to the latest address or fax number.

Time notice is given

- 4.3 Any notice or communication is to be treated as given at the following time:
 - 4.3.1 If it is delivered, when it is left at the relevant address.
 - 4.3.2 If it is sent by post, two (or, in the case of a notice or communication posted to another country, nine) business days after it is posted.
 - 4.3.3 If it is sent by fax, as soon as the sender receives from the sender's fax machine a report of an error free transmission to the correct fax number.



4.3.4 If it is emailed, as soon as the sender receives confirmed received receipt or confirmation by receipt by email.

However, if any notice or communication is given, on a day that is not a business day or after 5pm on a business day, in the place of the party to whom it is sent it is to be treated as having been given at the beginning of the next business day.

5 Miscellaneous

Commencement of Agreement

5.1 Unless otherwise provided in this Agreement, this Agreement commences from the date of this Agreement.

Ending of Agreement

- 5.2 This Agreement ends upon the earlier of:
 - 5.2.1 the Authority confirming that the risks posed by the groundwater on, from or under the Gasworks Site are considered acceptable; or
 - 5.2.2 the parties agreeing in writing to terminate this Agreement; or
 - 5.2.3 the South Yarra Main and Hobsons Bay Main and Pickles Street Branch Sewer no longer act as a control for the groundwater.

No fettering of Council's powers

5.3 It is acknowledged and agreed that this Agreement does not fetter or restrict the power or discretion of Council to make any decision or impose any requirements or conditions in connection with the granting of any planning approval or certification of any plans of subdivision applicable to the Gasworks Site or relating to any use or development of the Gasworks Site.

Council cannot withhold approval of Melbourne Water or South East Water works on the basis that it may result in the sewers no longer acting as a groundwater control.

Release

In the event that the South Yarra Main and/or the Hobsons Bay Main no longer act as groundwater control due to works undertaken by Melbourne Water or South East Water acting reasonably, Council releases Melbourne Water and South East Water from any costs, claims or expenses incurred by Council relating to those works.

No waiver

Any time or other indulgence granted by Council to Melbourne Water or South East Water or any variation of the terms and conditions of this Agreement or any judgment or order obtained by Council against Melbourne Water or South East Water will not in any way amount to a waiver of any of the rights or remedies of Council in relation to the terms of this Agreement.



Severability

If a court, arbitrator, tribunal or other competent authority determines that a word, phrase, sentence, paragraph or clause of this Agreement is unenforceable, illegal or void then it must be severed and the other provisions of this Agreement will remain operative.

6 Definitions and interpretation

Definitions

6.1 In this document the following definitions apply:

Act means the Environment Protection Act 1970 (Vic).

Agreement means this Agreement and any Agreement executed by the Parties expressed to be supplemental to this Agreement.

Authority means the Environment Protection Authority and its successors in title.

Gasworks Site means the land situated at the intersection of Pickles and Graham Streets, Albert Park and being the land identified in the Location Plan attached to this Agreement.

Groundwater has the same meaning as under section 3(1) of the Act.

Hobsons Bay Main means that part of the main sewer located on Graham Street, Albert Park as identified on the Location Plan attached to this Agreement.

Monitoring Plan means the plan, as amended from time to time, to be prepared by Council to the satisfaction of all the parties, detailing the groundwater monitoring to be conducted in the vicinity of the South Yarra Main, Hobsons Bay Main and Pickles Street Branch Sewer.

Party or Parties means Council, Melbourne Water, South East Water and their successors in title.

Pickles Street Branch Sewer means that part of the sewer located on Pickles Street, Albert Park as identified on the Location Plan attached to this Agreement.

South Yarra Main means that part of the sewer located on Bridport Street, Albert Park as identified the Location Plan attached to this Agreement.

Interpretation

- 6.2 In this document, unless the context otherwise requires:
 - 6.2.1 The singular includes the plural and vice versa.
 - 6.2.2 A reference to a gender includes a reference to each other gender.



- 6.2.3 A reference to a person includes a reference to a firm, corporation or other corporate body and that person's successors in law.
- 6.2.4 If a Party consists of more than one person this Agreement binds them jointly and each of them severally.
- 6.2.5 A term used in this Agreement has its ordinary meaning unless that term is defined in this Agreement. If a term is not defined in this Agreement and it is defined in the Act it has the meaning as defined in the Act.
- 6.2.6 A reference to an Act or Regulation includes any Acts, Regulations or amendments amending, consolidating or replacing the Act or Regulation.
- 6.2.7 The introductory clauses to this Agreement are and will be deemed to form part of this Agreement.





Execu	ution	and	date

Executed as a deed.

4.1.10

The Common Seal of CHTY OF PORT PHILLIP was affixed in the presence of: Signed under delegations authority on behalf of Port Phillip City Council

JOHN HOLLS

Mayor

GM. Cit = Whateler Sorris

EXECUTED BY JANE DENPA of MELBOURNE WATER Its duly appointed Attorney in the presence of

Witness

Kathy Uhlil

Name (Print)

Date of Power of Attorney 19.5.08

Gy	of SOUTH EAST WATER LIMITED its duly appointed Atterney in the presence of:	Ry	Any
	Steve M-		
	Witness	-Attorney -	Anthony William Kelly Company Secretary South East Water Limited ACN 066 902 547
	STEVE MUIR		
	Name (Print)	Date of Power of	Attornoy





Attachments

Location Plan



APPENDIX F CALIBRATION CERTIFICATES

EQUIPMENT CERTIFICATION REPORT

Sample Pro Micro Purge Low-Flow Bladder Sampling Pump

This Pump has been checked as follows: Cleaned / checked 14 Clean and check all components Date: Signature: Please check that the following items are received and all items are returned. Please clean equipment before returning. A minimum \$20 service/repair charge applies to any unclean or damaged items. Received Returned Description QED Sample MicroPurge Pump Serial No: 11561 V Pump Operating Field Guide laminated V N'N Pump Controller ID: OL Batt Status Pump Controller Blue Airline Hose Blue Airline Hose Quick Connect Fitting for 1/4" Airline V Pump Tube & Cap Hanger Cable S/steel, length 60 m Hanger Cable Clamp - Black with Orange Tip Controller Instructions inside case P П Compressor ID: TA41014 1 Comp connecting Hose & Push lock fittings Gas Bottle CO2 ID: CO2D Gas Regulator ID: _____ in Carry Case П CO2D Cylinder Gas Regulator Shift Spanner Gas Bottle Trolley E Cylinder weight... Without Trolley_ With Lid: Yes/No Spare Disposable Bladders, qty 2 Spare balls, Qty 👱 Spare o-rings, Qty 2 Processors Signature/ Initials QUOTE NO.: 24554 CLIENT'S REF:P/O No: 210074 CLIENT'S REF: Job No: _ ID: OSP6P RETURN DATE: / / CONDITION ON RETURN: TIME:

"We do more than give you great equipment... We give you great solutions!"

Phone: (Free Call) 1300 735 295 Environmental Assessment Technologies Fax: (Free Call) 1800 675 123 Adelects Branch 27 Bestah Road, Norwood, South Australia 500.7 Email: Recruit EnviroSA® than Sydney Branch Level 1, 4 Talavers Road. Noch Ryde 2113 Email RentalsEnviroNSW/91 Melbourne plantin II Caribbean Drive, Scottaby 3139 Small: RentateEword/C@tharmshaher.com

Oct 10



Equipment Report - TPS 90FLMV Water Quality Meter

This Water Quality M	eter has been per	formance chec	ked / calibrate	ed* as follows	S:		
pН	→ pH 6.		pH 7.00	pH 4.00		pH 10.00	□ pH
Conductivity	□ 0.0m	S/cm	2.76mS/cm	12.88mS		58.6mS/cm	Sala de Cara d
TDS	□ 0.0 p		36 ppk		ppk		
Dissolved Oxygen	0.00p	ppm in Sodium			5100000	100% Satur	ation in Air
Redox (ORP)**	Elect	rode operability	test 240mV	+/- 10%. A	ctual: <	₃ mV	
☐ Electrodes cleaned	l/checked		Charged &	9 v (min 7.2	2V) 🗆	Temperatu	re
Turbidity	0.0 NT		ONTUE	360NTU		NTU	
Date: 17042 Signed: Please check that the return. A minimum \$2 Items not returned will	20 cleaning / servi	re received and	ge may be an	s are cleaned	and dec	ontaminated or damaged	i before items.
Sent Received	Returned	Item				0 2	
Sent Received	U	90FLMV Unit.	Ops check	/ Battery Vo	Itage @	8.3	
N,	0	pH sensor 5m	1				
K D		Conductivity /	TDS / Tempo	erature k=10	sensor 5	m	
5	10	Dissolved Ox	ygen YSI5739	e sensor 5m			
id B	b	Redox (ORP) Battery charge		12V DC 20	00m A		
U D	II.	Instruction Ma		10 12 V DC 20	JUHA		
D E	G	Quick Guide	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
V 0	1.7	Syringe with s	storage solution	on for pH & C	ORP sens	ors	
D D	Ð	Turbidity 5m	87	0.53			
	E)	Carry Case					
Processors Signature	/ Initials	<u> </u>					
EE Quote Reference		. Condit	ion on return				
Customer Ref							
Equipment ID	90FLMV WA	3					
Equipment serial no.							
Return Date	1 1						
Return Time							

EQUIPMENT CERTIFICATION REPORT

Sample Pro Micro Purge Low-Flow Bladder Sampling Pump

This Pump has been checked as follows:

Checked by: PETER H	Cleaned /	checked		cription - MPKITO
Please check that the following items are received and all items are returned. Please clean equipment before returning. A minimum \$20 service/repair charge applies to any unclean or damaged item Sent Received Returned Description QED Sample MicroPurge Pump Serial No: // 3 3 3 1			nC. Z	an and check all components
Please check that the following items are received and all items are returned. Please clean equipment before returning. A minimum \$20 service/repair charge applies to any unclean or damaged item Sent Received Returned Description QED Sample MicroPurge Pump Serial No: // 3 3 3 1	Chaolead l	PETER	4	
Please check that the following items are received and all items are returned. Please clean equipment before returning. A minimum \$20 service/repair charge applies to any unclean or damaged item Sent Received Returned Description	CHECKEG	бу		
Please check that the following items are received and all items are returned. Please clean equipment before returning. A minimum \$20 service/repair charge applies to any unclean or damaged item Sent Received Returned Description	Signature	0	y c	
before returning. A minimum \$20 service/repair charge applies to any unclean or damaged item Sent Received Returned Description QED Sample MicroPurge Pump Serial No://33 Pump Operating Field Guide laminated Pump Controller ID: @M/NO Batt Status 4.15 Pump Controller Blue Airline Hose Pump Tube & Cap Hanger Cable S/steel, length				
Sent Received Returned Description Controller Instructions inside case Compressor ID: Confider Gas Bottle CO2 ID: Co2D Gas Regulator ID: Co2D Gas Regulator Shift Spanner Gas Bottle Trolley Collinder weight Without Trolley KG Flow Cell ID: Controller Spare balls, Qty Spare Disposable Bladders, qty Processors Signature/ Initials Controller Initia				
QED Sample MicroPurge Pump Serial No:/				
Pump Operating Field Guide laminated Pump Controller ID: @MP/O Batt Status 4.15 Pump Controller ID: @MP/O Batt Status 4.15 Pump Controller Blue Airline Hose Blue Airline Hose Quick Connect Fitting for ¼" Airlin Pump Tube & Cap Hanger Cable S/steel, length 5 m Hanger Cable Clamp – Black with Orange Tip Controller Instructions inside case Compressor ID: TAU IO F Comp connecting Hose & Push lock fittings Gas Bottle CO2 ID: CO2D Gas Regulator ID: in Carry Case CO2D Cylinder Gas Regulator Shift Spanner Gas Bottle Trolley Cylinder weight Without Trolley Flow Cell ID: FC 500 With Lid Yest Spare Disposable Bladders, qty Spare Disposable Bladders, qty Processors Signature/ Initials CLIENT'S REF: Job No: CONDITION ON RETURN: TIME: CONDITION ON RETURN: CONDITION ON RETURN: CONDITION ON RETURN:		Received		
Flow Cell ID:		ī		
Flow Cell ID:		Ä		Pump Controller ID: QMPIO O Batt Status 4.15v
Flow Cell ID:	TO TO		177.5	Pump Controller Blue Airline Hose
Flow Cell ID:	9			- 사람들이 보고 있다면 보고 있는데 보고 있다면 하고 있다면 되고 있다. 그는 사람들이 보고 있는데 보고 있다면 보고 있다면 있다면 보고 있다면 있다.
Flow Cell ID:				
Flow Cell ID:				
Flow Cell ID:	12			
Flow Cell ID:				
Flow Cell ID:	U			Compressor ID: TA4101F
Flow Cell ID:	·			Comp connecting Hose & Push lock fittings
Flow Cell ID:		区)		* 하는 것이 없었습니다. 경기 전에 가장 하면 하면 하면 되었다. 보는 사람들이 보고 있는 것이 되었다는 사람들이 되었다.
Flow Cell ID:		₩ /		
Flow Cell ID:		DE G		. 마스에 눈이 살았는데 그리는 이 나를 하는데 나를 하는데 하는데 하는데 나를 하는데 하를 하는데 하는데 하는데 하는데 보다 하는데 되었다.
Flow Cell ID:		图 NA		
Spare balls, Qty 2 Spare o-rings, Qty 2 Processors Signature/ Initials CLIENT'S REF:P/O No: CLIENT'S REF:Job No: CLIENT'S REF:Job No: CLIENT'S REF:Job No: CLIENT'S REF:Job No:				Cylinder weight Without Trolley KG
Spare balls, Qty 2 Spare o-rings, Qty 2 Processors Signature/ Initials CLIENT'S REF:P/O No: CLIENT'S REF:Job No: CLIENT'S REF:Job No: CLIENT'S REF:Job No: CLIENT'S REF:Job No:			닏	
QUOTE NO.: 2 44 68 CLIENT'S REF:P/O No:		님	님	
QUOTE NO.: 2 44 68 CLIENT'S REF:P/O No:		H		
QUOTE NO.:		ш	\sim	Propagana Signatura/Initials
RETURN DATE:/ CONDITION ON RETURN :			, - 19	Trocessors orginature/ mittals
RETURN DATE:/ CONDITION ON RETURN :	OUOTEN	NO: 244	\$18 /	CLIENT'S REF: P/O No:
RETURN DATE:/ CONDITION ON RETURN :	ID: OSP6	P		CLIENT'S REF: Job No:
TIME:				
TIME:				då
	RETURN	DATE:/_	/	CONDITION ON RETURN:
				59 N F

We do more than give you great equipment... We give you great solutions!

Phone: (Free C	Call) 1300 735 295	Environmental Assessment Techni	ologies	Fax: (Free Cal	II) 1800 675 123
Melbourns Branch	Systney Branch	Aderaide Branch	Brisbane Branch	.121	h Branch
5 Canbbean Drive,	Level 1, 4 Talavers Road	27 Beurah Road, Norwood.	Unit 2/5 Ross St		Beringarra Ave
Scoresby 2179	Bloth Ryde 2113	South Australia 5067	Newstead 4009		sga WA 6090

Issue 4

Oct 10

EQUIPMENT CERTIFICATION REPORT

Sample Pro Micro Purge Low-Flow Bladder Sampling Pump

Dampie I to tritero I dig	o now i tow placed or pattipling i unip		
This Pump has been checked as follows:			
1975 \$ 6 0 18 1 Julius \$50 (\$\frac{1}{100} 1 1 100) \(Light (1970 \text{Light	n) - 1/1		
Cleaned / checked Description Clean	ription MICro Purpe Kit		
Clear	and check all components		
Date: 15-04-1011	and check an componency		
Date. St. = Up North			
Checked by:			
Checked by.			
Signature:			
	eccived and all items are returned. Please clean equipment		
before returning. A minimum \$20 service	repair charge applies to any unclean or damaged items.		
Sent Received Returned	Description		
	QED Sample MicroPurge Pump Serial No: 1/1 90		
	Pump Operating Field Guide laminated		
	Pump Controller ID: 10 N Batt Status high		
	Pump Controller Blue Airline Hose		
	Blue Airline Hose Quick Connect Fitting for 1/4" Airline		
	Pump Tube & Cap		
	Hanger Cable S/steel, length <u>fo</u> m		
	Hanger Cable Clamp - Black with Orange Tip		
	Controller Instructions inside case		
	Compressor ID: TA 4101		
	Comp connecting Hose & Push lock fittings		
	Gas Bottle CO2 ID:		
	CO2D Gas Regulator ID: in Carry Case		
- Elm	CO2D Cylinder Gas Regulator Shift Spanner		
	Gas Bottle Trolley		
	Cylinder weight Without TrolleyKG_		
	Flow Cell ID: Ffc 500 A With Lid: Yes/No		
	Spare Disposable Bladders, qty 2		
	Spare balls, Qty 2		
	Spare o-rings, Qty 2		
	Processors Signature/ Initials		
0111111			
QUOTE NO.: 24468	CLIENT'S REF:P/O No:		
ID: OSP6P	CLIENT'S REF: Job No:		
RETURN DATE://	CONDITION ON RETURN:		
TIME:	(3)		
	*		
"We do more than give you	great equipment We give you great solutions!"		
Phone: (Free Call) 1300 735 295 Environi	nental Assessment Technologies Fax: (Free Call) 1800 575 123		

Netbourse Stands Il Califobean Orive, Scoresby 3179 Email RestateEwireVIC@themolainer.com	Sydney Branch Level 1, 4 Talayera Flood. Horth Ryde 2113 Ernak Rentista Emirch SW Grammulisher com	Adelaide Branch 27 Braiath Road, Norwood, South Australia Stat? Emel: Remail EnviroSA@thermolipher.com	Brittane Branch Unit 25 Ross St Nyvotios 4006 Email: Rentals EnviroCLD@thermetishar.com	Ferth Branch 121 Beringarts Ave Malaga WA 6090 Emait RentalsEnwoWA@memorishet.co
leena A		Oct 10		0.0500



Equipment Calibration Record - Minirae 3000

This equipment calibration	n record is to be	stored in your job folder	
Equipment Type:	Rae Syster	ns Minirae 3000 PID	
Equipment Number:			
Date Calibrated:	10 Feb	2011	
Calibrated By:	Shane Fu	long / Vanessa Round (nan	ne)
Job Number:	210074		
Details of Calibration:			
Fresh Air Calibration:		0.0	ppm
* 100 ppm Isobutylene	Calibration:		ali bratia ppm
Isobutylene Cylinder Expir	ration Date:	Se Se	et to this)
Isobutylene Cylinder Lot N	lumber:	77175	
Battery Reading:			v
Filter Checked (Condition	on):		

^{*} Record the concentration of the calibration standard



Equipment Calibration Record - TPS

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

Equipment Type:	TPS Water Quality	Meter		
Equipment Number:	90 FLMV	F		
Date Calibrated:	20/4/11		_	
Calibrated By:	L. Boland		_ (name)	
Job Number:	211074		_	
Details of Calibration:				
Electrode Checked (Cor	ndition):	hood		
pH at 4.01 Reading:		4.00		
pH at 7.01 Reading (or 6	5.88):	N.E.		
ORP in Redox solution (200-275 mV):	104		(mV)
Temperature:		na		°C
Conductivity in 2.76 mS	cm:	nr		mS/cm
Conductivity in 12.88 ms	S/cm:	12-	oo mS/cm	mS/cm
Dissolved Oxygen in 0.0	0 ppm in Sodium sulfa	te:		%
Dissolved Oxygen 100%	Air Saturation:	Ne		%
Turbidity in 0 NTU		No		;
Turbidity in 900 NTU		Na		



Equipment Calibration Record - TPS

This equipment calibration record is to be stored in your job folder TPS Water Quality Meter Equipment Type: hired from thermo Risher Equipment Number: 20 April 2011 Date Calibrated: Calibrated By: 210079 Job Number: Details of Calibration: Electrode Checked (Condition): pH at 4.01 Reading: pH at 7.01 Reading (or 6.88): ORP in Redox solution (200-275 mV): Temperature: Conductivity in 2.76 mS/cm: mS/cm Conductivity in 12.88 mS/cm: mS/cm Dissolved Oxygen in 0.00 ppm in Sodium sulfate: Dissolved Oxygen 100% Air Saturation: NA Turbidity in 0 NTU NA Turbidity in 900 NTU



APPENDIX G

SOUTH EAST WATER 'Standards for Trade Waste Discharge to the Sewer System'



Standards for Trade Waste Discharged to the Sewerage System

All the Trade Waste Limits you need to know to discharge trade waste to the sewerage system.



Issue Date: March 2004





STANDARDS FOR TRADE WASTE DISCHARGED TO THE SEWERAGE SYSTEM

The nature an levels of the characteristics of **trade waste** ischar e must at all times comply with the stan ar s set out in this sche ule.

1 PHYSICAL CHARACTERISTICS

. Tem erature

The **ustomer** must not ischar e **trade waste** with a temperature reater than 38°C.

.2 Solids

The ustomer must not ischar e **trade waste** containin ross Soli s, Suspen e Soli s or Total Dissolve Soli s except as provi e in para raphs (a) to ().

- (a) ross Solids contained in tra e waste must
 - (i) be able to pass throu h a bar screen with 13mm spaces between bars an
 - (ii) have a uiescent settlin velocity of not more than 3m hour.
- (b) here the total mass loa of Suspen e Soli s excee s 1,000 ay, the concentration of Suspen e Soli s must not excee 10,000 m itre.
- (c) Except as provi e in para raph (), the total mass loa of Total Dissolve Soli s must not excee 200 ay.
- () The ustomer must not ischar e waste containin fibrous material, which, in the opinion of South East Water is li ely to cause obstructions in a rain or sewer.
- . ils ats and grease
- (a) The ustomer must not ischar e trade waste containin any free or floatin layer of oil, fat or rease.
- (b) The ustomer may ischar e trade waste containin emulsifie oil, fat or rease which, in the opinion of South East Water, is bio e ra able, if the emulsion is stable
 - (i) at a temperature of 15° C an
 - (ii) when it is in contact with raw sewa e an the resultin mixture has a p no less than 4.5 an no reater than 10.0.
- (c) The ustomer must not ischar e trade waste containin emulsifie oil, fat or rease which, in the opinion of South East Water is not bio e ra able, it contains more than 1,000 m itre of material recovere by a solvent prescribe South East Water as extractable matter when the emulsion
 - (i) is stable at a temperature of 15⁰ C an
 - (ii) is in contact with raw sewa e an the resultin mixture has a p no less than 4.5 an no reater than 10.0.
- () The ustomer must not ischar e tra e waste containin emulsifie oil, fat or rease if it contains more than 200 m itre of material recoverable by a solvent prescribe by South East Water as extractable matter when the emulsion is
 - (i) unstable at a temperature of 15°C an

(ii) in contact with raw sewa e an the resultin mixture has a p no less than 4.5 an no reater than 10.0.

.4 rganic Li uids

- (a) The ustomer must not ischar e trade waste containin any free or floatin layer of or anic li ui.
- (b) The ustomer must not ischar e any trade waste, which, in the opinion South East Water, may be flammable.

. Late Emulsions

(a) In this clause

iodegrada le in relation to trade waste means that, in the opinion South East Water, the total or anic carbon content of the trade waste woul ecrease by at least 90 when submitte to the sewa e treatment process employe by the Company for that waste

late emulsion inclu es an emulsion containin paint, a hesive, rubber, plastic or similar materials.

sta le late emulsion means a latex emulsion in which the soli s eposite in a filter o not increase by more than 200 m itre when the emulsion

- (i) is at 15° C an
- (ii) is in contact with raw sewa e an the resultin mixture has p no less than 4.5 an no reater than 10.0.
- (b) The ustomer may ischar e trade waste containin a bio e ra able stable latex emulsion.
- (c) The ustomer must not ischar e trade waste containin a stable latex emulsion, which is not bio e ra able at a concentration reater than 1,000 m itre of total soli s.
- () The ustomer must not ischar e trade waste containin an unstable latex emulsion.

. adioacti e waste

The ustomer must only ischar e **trade waste** which complies in all respects with the ealth (a iation Safety) e ulations 1984, as amen e from time to time.

. olour

The ustomer must not ischar e **trade waste** containin Colour reater than 9 A ams Nic erson (42) units, etermine from the most pronounce Colour obtaine from a sample a uste to a p of not less than 7.0 an no reater an than 8.0 followin biolo ical treatment by an activate slu e process.

2 CHEMICAL CHARACTERISTICS

2. alue

The ustomer must not ischar e **trade waste** with a p value less than 6.0 or reater than 10.0, except as provi e by clause 2.3 (b) (ii).

2.2 rganic oncentration

The ustomer must not ischar e **trade waste** with a total mass loa of 5 ay biochemical oxy en eman in excess of 1,000 ay, unless its concentration is no reater than 4,000 m itre.

2. itrogen

The ustomer must not ischar e trade waste with a concentration of

- (a) Total el ahl Nitro en reater than 500 m itre or
- (b) Ammonia, plus ammoniacal ion (expresse as N) reater than:
 - (i) 50 m itre, except as provi e by this para raph.
 - (ii) 200m litre, where
 - (A) the **trade waste** ischar e can only be receive by Melbourne ater s estern Treatment Plant
 - (B) a ris assessment has been con ucte
 - (C) the customer can comply with a restricte p ran e of 6.0 to 8.0 an
 - (D) **the customer** has emonstrate to **South East Water**, that commonly available waste minimi ation technolo y has been applie to the best extent practicable.

2.4 Sul ur Su stances

(a) idised Sul ur

- (i) For the purpose of this para raph, **idised Sul ur** means the chemical substances expresse as S an nown as Sulfates, Sulfites an Thiosulfates.
- (ii) **The ustomer** must not ischar e **trade waste** containin Oxi ise Sulfur with a concentration of 100 m itre or more, except as provi e in this para raph.
- (iii) **The ustomer** must treat any **trade waste** with a concentration of Oxi ise Sulfur reater than 600 m itre, before it is ischar e .
- (iv) here trade waste prior to ischar e woul have a total concentration of Oxi ise Sulfur of not less than 100 m itre an not more than 600 m itre, the ustomer must treat any stream of waste contributin to the ischar e which has a concentration of Oxi ise Sulfur reater than 600 m itre.
- (v) The ustomer must use the best available technolo y, as etermine by South East Water, to treat any trade waste un er sub para raph (iii) or (iv).
- (b) **The ustomer** must not ischar e **trade waste** containin Sulfi e in a concentration reater than 1 m itre.

2. Metals

(a) The ustomer must not ischar e any element liste in Column 1 of Table A, except in accor ance with this sub clause 2.5.

- (b) here the aily mass loa of any element ischar e is between the lower limit specifie in Column 2 and the upper limit specifie in Column 3 for that element, **trade waste** must not excee the concentration specifie in Column 4.
- (c) here the aily mass loa s of any element ischar e is either lower than the limit specifie in Column 2 or reater than the limit specifie in Column 3, **South East Water** must etermine the maximum concentration of that element which the **ustomer** may ischar e.
- () here no entry is ma e in Column 2 an 3 for any element, **trade waste** must not excee the concentration for that element specifie in Column 4.
- (e) here the **ustomer** has emonstrate to **South East Water**, that it is unable to limit the concentration of Boron (as B) to the concentration specifie in Table A, Column 4 usin commonly available waste minimi ation technolo y to the best extent practicable, the **ustomer** may ischar e **trade waste** containin Boron in a concentration no reater than 100 m itre.
- (f) here the **ustomer** has emonstrate to **South East Water**, that it is unable to limit the concentration of Man anese (as Mn) to the concentration specifie in Table A, Column 4 usin commonly available waste minimi ation technolo y to the best extent practicable, the **ustomer** may ischar e **trade waste** containin Man anese in a concentration no reater than 100 m itre.

Table A

olumn			
Element	olumn 2	olumn	olumn 4
	grams day	grams day	mg L
Arsenic			1
Boron as B			25
Barium			150
Beryllium			30
Ca mium	0.4	20	2
Chromium	100	5000	10
Cobalt			10
Copper	100	5000	10
Iron	2000	100000	100
ea	100	5000	10
Man anese			10
Mercury	0.2	10	1
Molyb enum			10
Nic el	10	500	10
Selenjum			10
Silver ¹	0.2	50	5
Thallium			20
Tin			10
ranium (238)			30
inc	200	15000	10

¹base on analysis usin i estion with a ua re ia.

2. alogens and alides

The ustomer must not ischar e **trade waste** containin a substance liste in Table B with a concentration reater than is liste for that substance.

Table B

Substances	Ma imum Allowa le oncentration Milligrams er Litre
Bromine (expresse as Br 2)	5
Chlorine (expresse as Cl ₂	5
Fluori e	30
lo ine (expresse I 2) in	5

2. yanide

The ustomer must not ischar e **trade waste** containin a cyani e concentration reater than 10 m itre.

2. Inhi itory hemicals

- (a) The ustomer must not ischar e any trade waste which, when ilute to a 5 solution with sewa e, woul inhibit the microbiolo ical sewa e treatment process applicable to that trade waste by more than 20.
- (b) **South East Water** must etermine the microbiolo ical sewa e treatment process referre to in sub para raph (a).

2. rganic Acids

The ustomer must not ischar e **trade waste** containin total phenoxyacetic aci s an chemical erivatives (expresse as phenoxyacetic aci) at a concentration reater than 1,000 m itre.

2. 0 henolic Su stances

The ustomer must not ischar e **trade waste** containin a substance liste in Table C with a concentration reater than is liste for that substance.

Table C

Substances			Ma imum Allowa le oncentration Milligrams er Litre
Sum of phenol, monochlorophenol,	ichlorophenol an	their	300
isomers			
Trichlorophenol			50
Tetrachlorophenols		5	
Pentachlorophenol			5

2. Aldehydes and etones

The ustomer must not ischar e **trade waste** containin a substance liste in Table D with a concentration reater than is liste for that substance.

Table D

Su stance	Ma imum Allowa le oncentration Milligrams er Litre
Acetone	50
Acrolein	0.1
Formal ehy e (expresse as C O)	200

2. 2 itriles

The ustomer must not ischar e **trade waste** containin acrylonitrile at a concentration reater than 1.0 m itre.

2. Mononuclear Aromatic ydrocar ons

The ustomer must not ischar e **trade waste** containin a mononuclear aromatic hy rocarbon liste in Table E in a concentration reater than is liste for the substance.

Table E

Su stance	Ma imum Allowa le oncentration Milligrams er Litre
Ben ene	1.0
Cumene	3.0
2,4 Dinitrotoluene	10.0
2, 6 Dinitrotoluene	10.0
Ethylben ene	2.0
Nitrotoluene	5.0
Styrene	2.0
Toluene	2.0
Total Xylenes	2.0

2. 4 alogenated Ali hatic ydrocar ons

The ustomer must not ischar e **trade waste** containin a halo enate aliphatic hy rocarbon liste in Table F in a concentration reater than is liste for that substance.

Table F

Su stance	Ma imum Allowa le oncentration Milligrams er Litre
1,2 Dichloroethane	5.0
1,1,1 Trichloroethane	3.0
1,1,2 Trichloroethane	3.0
1,1,2,2 Tetrachloroethane	2.0
exachloroethane	1.0
Chloromethane (Vinyl Chlori e Monomer)	0.5
1,2 Dichloroethylene	5.0
Trichloroethylene	1.0
Tetrachloroethylene	1.0
Carbon Tetrachlori e	1.0
Methylene Chlori e	5.0
Methyl Chlori e	1.0
Methyl Bromi e	1.0
Trichloromethane (Chloroform)	1.0
Bromo ichloromethane	1.0
Trichlorofluoromethane	1.0
Dichloro ifluoromethane	1.0
Chloro ibromomethane	5.0
1,1 Dichloropropane	5.0
1,2 Dichloropropane	5.0
1,3 Dicloropropane	1.0
exachlorobuta iene	1.0

2. Ali hatic ydrocar ons

The ustomer must not ischar e trade waste containin aliphatic hy rocarbons C6 to C9 at a concentration reater than 1.0 m itre. ote: shown in section 2. o Schedule 4 o the Water and Sewerage Licence is an error.

2. Esters

The ustomer must not ischar e **trade waste** containin a substance liste in Table in a concentration reater than is liste for that substance.

Table G

Su stance	Ma imum Allowa le oncentration Milligrams er Litre
Ethyl Acrylate	1.5
Methyl Methacrylate	30.0

2. Ethers

The ustomer must not ischar e **trade waste** containin iethylene lycol monobutyl ether (butyl carbitol) in a concentration reater than 2,000 m itre.

2. ther rganics

The ustomer must not ischar e **trade waste** containin a substance liste in Table with a concentration reater than is liste for that substance.

Table H

Su stance	Ma imum Allowa le oncentration Milligrams er Litre
lyphosate	10
Trifluralin	10
Epichlorohy rin	0.3

2. ersistent rganochlorine esticides

- (a) **The ustomer** must not ischar e **trade waste** containin persistent or anochlorine pestici es, except in accor ance with this para raph.
- (b) **The ustomer** must not ischar e **trade waste** containin pestici es liste in Table I in a concentration reater than is liste for that pestici e.

Table I

esticide	Ma imum Allowa le oncentration Milligrams er Litre
Al rin	0.001
Chlor ane	0.006
DDT	0.003
Diel rin	0.001
eptachlor	0.003
in ane	0.100

2.20 alogenated Aromatic ydrocar ons

- (a) **The ustomer** must not ischar e **trade waste** containin halo enate aromatic hy rocarbons, except in accor ance with this para raph.
- (b) **The ustomer** must not ischar e **trade waste** containin a substance liste in Table in a concentration reater than is liste for that substance.

Table J

Su stance		Ma imum Allowa le oncentration Milligrams er Litre
Polychlorinate	Biphenyls (PCBs)	0.002
Polybrominate	Biphenyls (PBB s)	0.002

2.2 hlorodi en o dio ins and hlorodi en o urans

- (a) The ustomer must not ischar e any trade waste containin any of the full ran e of chloro iben o p ioxin an chloro iben o furan co eners, except in accor ance with this para raph.
- (b) Sub ect to sub para raphs (c), () an (e), **the ustomer** must not ischar e **trade waste** containin any of the full ran e of chloro iben o p ioxin an chloro iben o furan con eners in a concentration reater than the NATO total toxic e uivalent of 40.0 n.
- (c) Notwithstan in sub para raph (b), **South East Water** may at any time in writin re uire **the ustomer** not to ischar e any **trade waste** containin any of the full ran e of chloro iben o p ioxin an chloro iben o furan con eners in a concentration reater than the NATO total toxic e uivalent of 20.0 n
- () Sub ect to sub para raph (e), **the ustomer** must not ischar e **trade waste** containin any 2,3,7 or 8 tetrachloro iben o p ioxin con eners in a concentration reater than the NATO toxic e uivalent of 20.0 n
- (e) Notwithstan in sub para raph (), **South East Water** may at any time re uire **the ustomer** not to ischar e any 2,3,7,8 tetrachloro iben o p ioxin con eners in a concentration reater than the NATO total toxic e uivalent of 5.0 n

2.22 eads ace Air

The ustomer must not ischar e **trade waste** to a sewer, which at the nearest point of the sewer accessible by humans from the point of ischar e, in any respect fails to comply with every relevant or Safe Australia Exposure Stan ar relatin to short term exposure levels.

2.2 ther Su stances

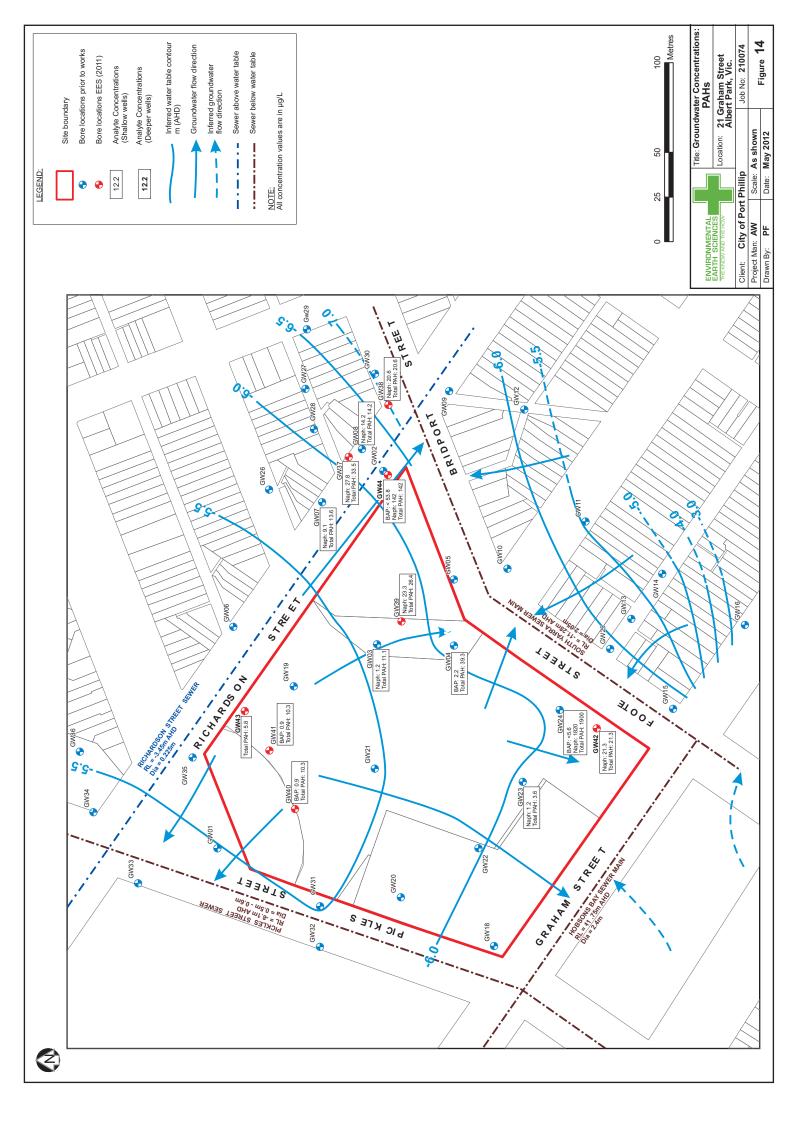
A ustomer must not ischar e trade waste containin any substance not otherwise mentione in this Sche ule:

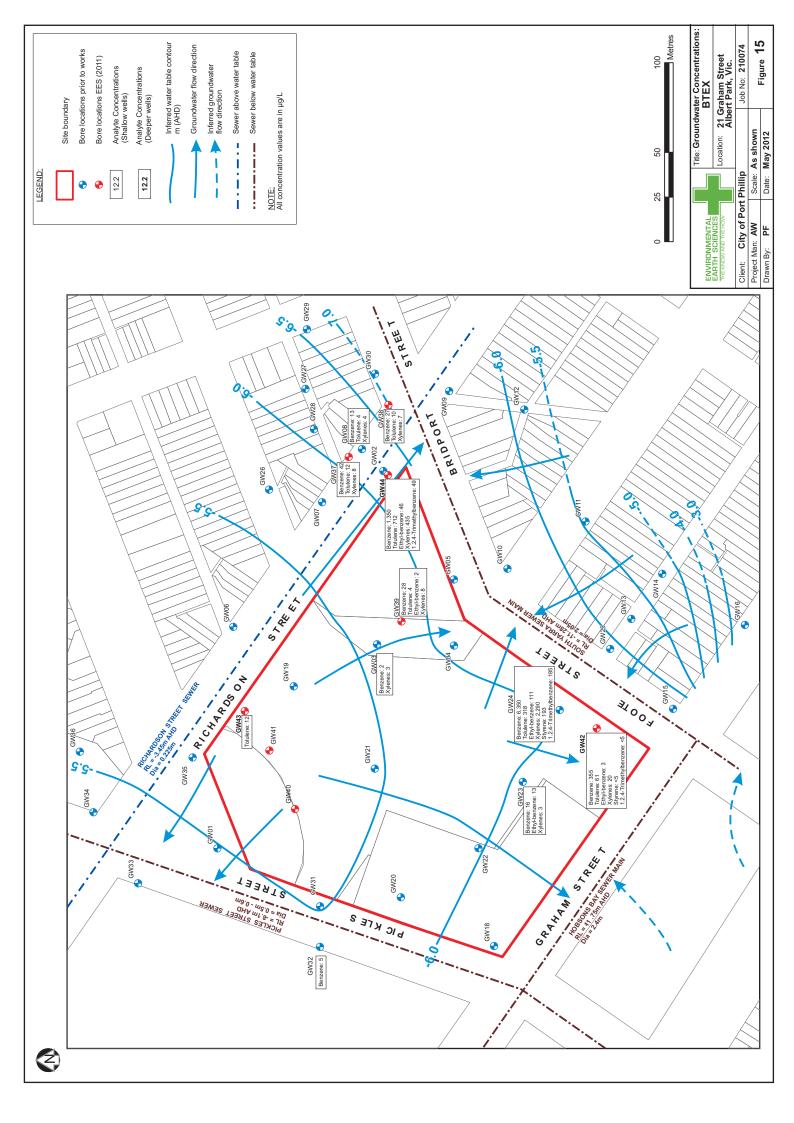
- (a) in a concentration no reater than 1 an
- (b) where the ischar e or release of which to any element of the environment is restricte or prohibite by any le islation applyin in Victoria an
- (c) in uantities or of a uality that in the opinion of **South East Water** woul or is reasonably li ely to en an er human life, compromise the safety of a person or of the wor s, or si nificantly a versely affect the operation of a sewa e treatment plant or any part of the environment.

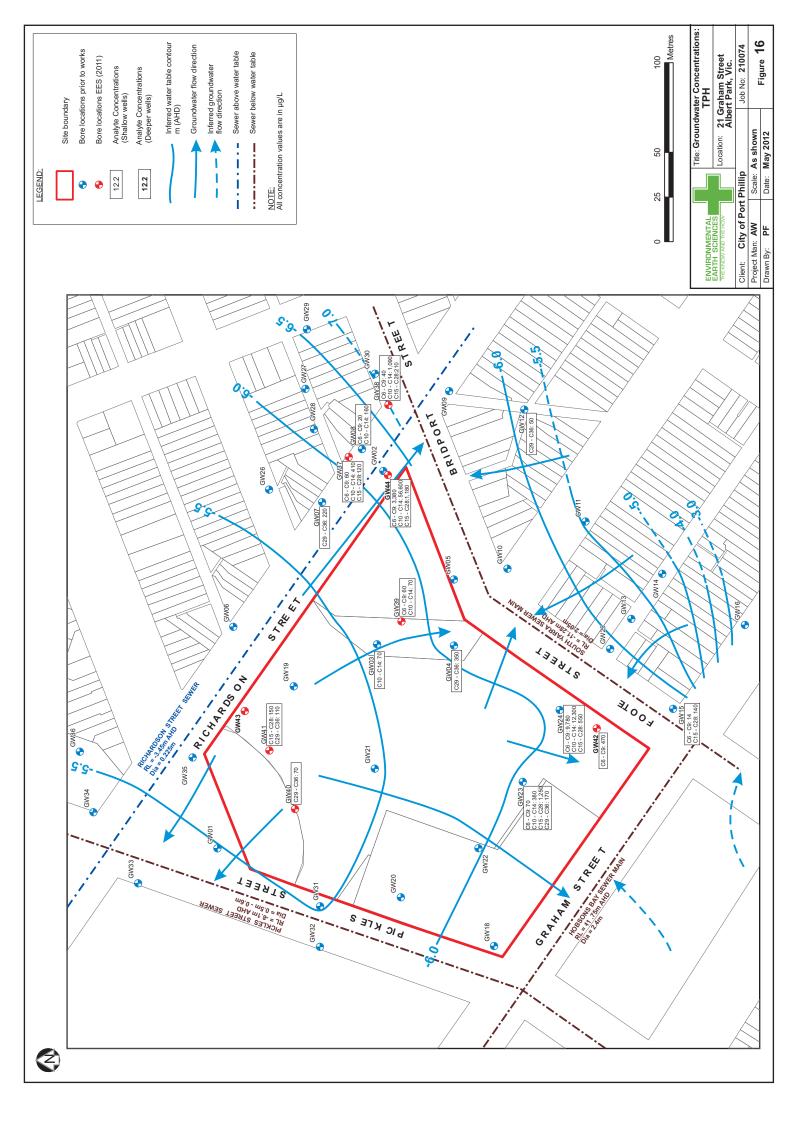


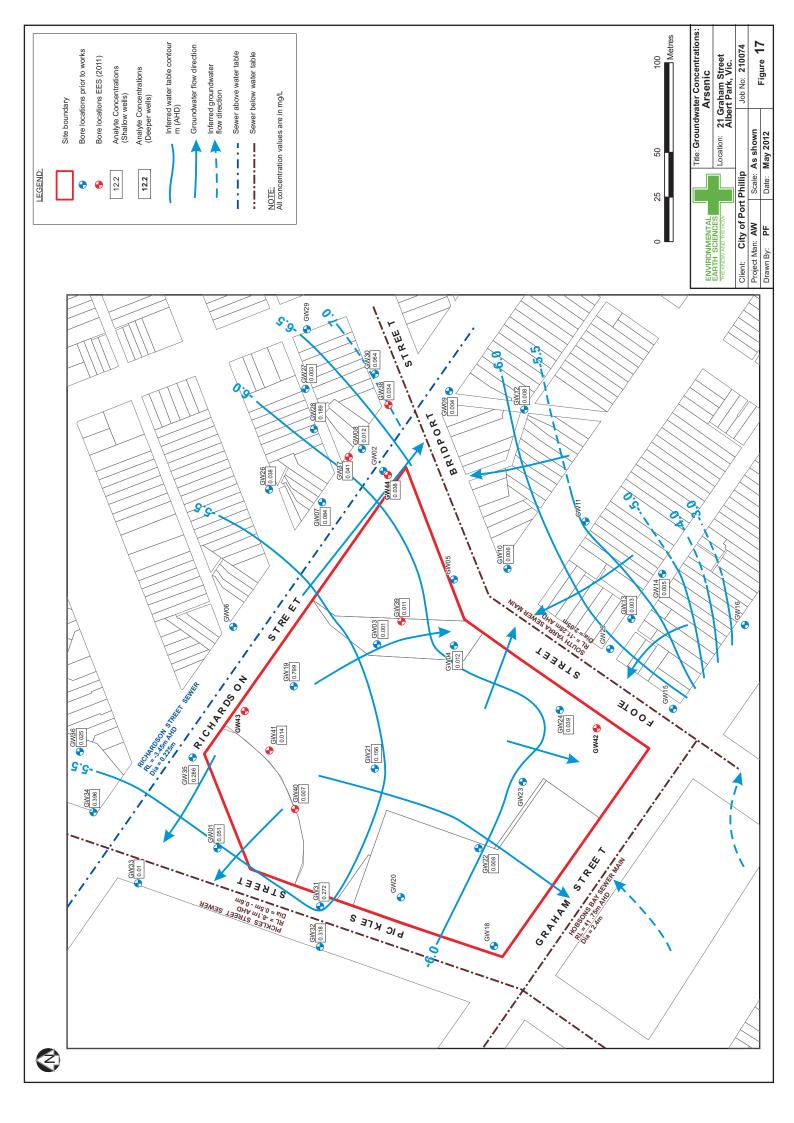
APPENDIX H

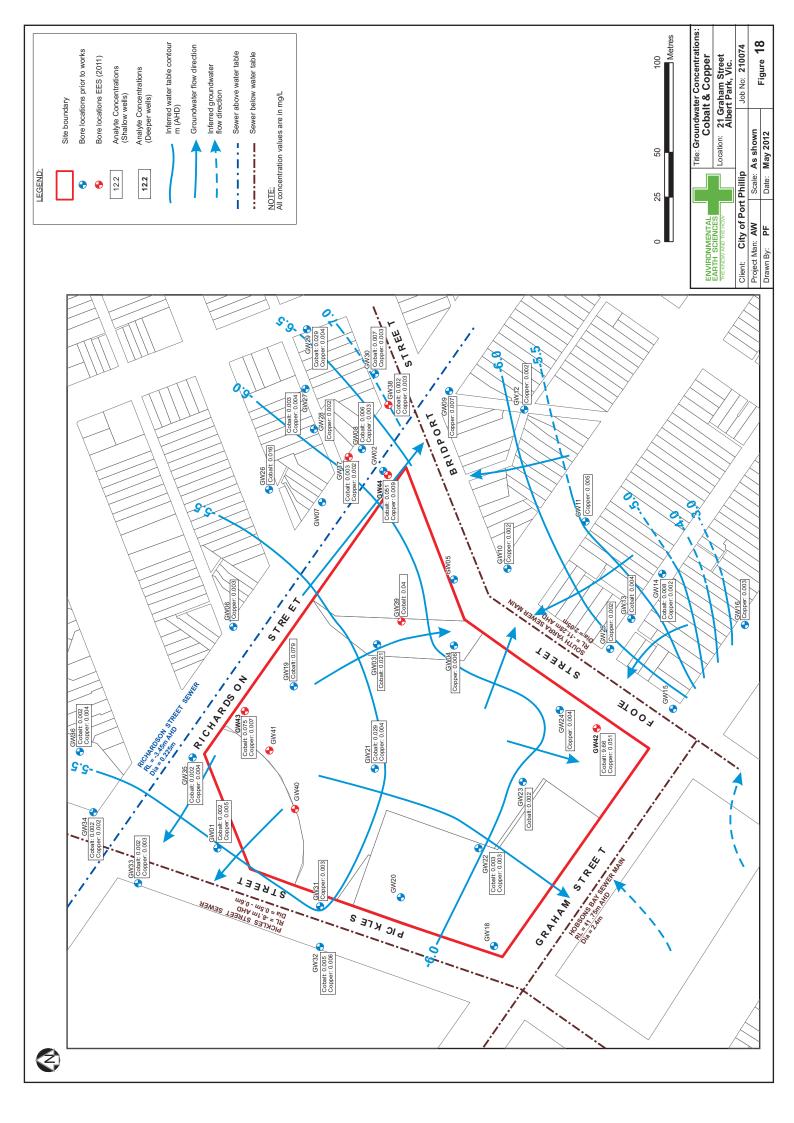
SUPPLEMENTAL FIGURES
ILLUSTRATING CONCENTRATIONS
OF SELECT ANALYTES

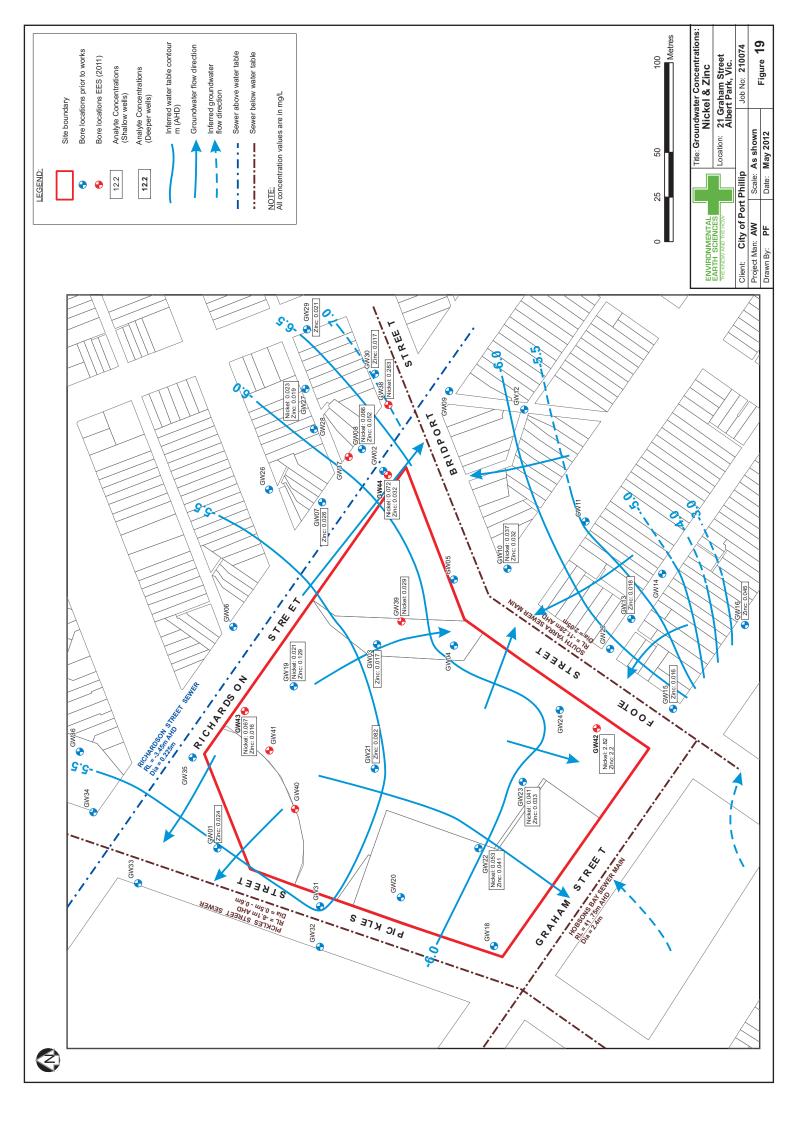














APPENDIX I GROUNDWATER FIELD CHEMISTRY DATA SHEETS



pe mV Dissolved EC Oxygen uScm ⁻¹ (ppm)	Dissolved EC Odour Colour	Comments
3.46 90045	mod cloudy	3 gm
3.62 790	۲	
3.35 758		Showed to Deam
2.90 761	4	8
2-95 772	Se sightly	
3.85 778	0 4	
4.29 783	2. 2.	
3.91 781		Start Sampling
		2
Sampling Container PI = Polyethy/ane G = Amber glass	Fleid Parameters Field parameters Field parameters will be measured e from EPA victoria Publication 669) ±10% Do when >1ppm (no criteria fi ±10% Lubidity ±3% EC ±0.05 pH ±10mV 0RP The meter will be calibrated every th manufacturer's sneedications	Fleid Parameters Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 689) #10% DO when >1ppm (no criteria for<1ppm) #10% Lubidity #14% EQ #15% DO when >1ppm (no criteria for<1ppm) #15% DO WHO PO WHO WHO CRITERIA PO WHO PO WH
	Sampling Container PI = Polyethylene G = Amber glass	g Container vetty/ene



gaswork 5	Comments		414	deep	deep							<i>u</i>	m	<i>u</i>	m 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	m 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<i>y</i>	
Site: South Melborne			1 cyolo 2 p/m		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		" " " " " " " " " " " " " " " " " " "	" " " " " " " " " " " " " " " " " " "	sampling.	seales solves	sextes plus	seyles plans.		sextes plus sextes plus (1) qeyes plus (1) qeye plus (1)				
	Colour	cloudy gony	1111	AAA	11	1100	100	145	" " " " " " " " " " " " " " " " " " "	7	7	7	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1
But Phillip	Odour	Noch		"				2	1 2									
Client: Chy of	uScm ⁻¹	1	707	2.51	2.57	2.57		111	2.57 2.57 2.55 2.55 2.55 2.55 2.55 2.55	2.57 2.57 2.52 2.55 2.55 2.56 2.55 2.56 2.55	2.57 2.57 2.57 2.57 2.55 2.55 2.55 2.55	2.57 2.57 2.57 2.55 2.55 2.55 2.55 2.15 2.15	2.57 2.57 2.57 2.55 2.55 2.55 2.15 2.15 2.15	2.57 2.57 2.52 2.55 2.55 2.56 2.15 2.15 2.16 2.16 2.16	2.57 2.57 2.57 2.57 2.57 2.55 2.55 2.55	2.57 2.57 2.57 2.57 2.55 2.55 2.55 2.15 2.15 2.15 2.16 3100	2.57 2.57 2.57 2.57 2.55 2.55 2.56 2.15 2.15 2.16 3.00	2.57 2.57 2.52 2.55 2.55 2.56 2.15 2.15 2.15 2.15 2.15 2.15 2.16 3.10 3.10
Client	Dissolved Oxygen (ppm)	6.30	1	2.04	5.53	5.54	5.33	5.34	5.54	5.54 5.54 5.54 4.87 4.87	5.54 5.54 5.54 4.87 4.88	5.54 5.53 4.87 4.87 4.97	5.54 5.53 4.87 4.97 4.97	5.54 5.53 4.87 4.97 4.97	5.54 5.53 4.87 4.97 4.97	5.54 5.54 4.87 4.97 4.97	5.54 5.53 4.87 4.97 4.97	5.54 5.54 4.81 4.87 4.87 4.97
	De mV	0/		11-0	a 100	0 00 1	1 2 2 1	1 2 2 7	1, 2, 2, 4	1 2 2 2 4 4 2 2 2	1 2 2 2 4 2 2 3	7 2 2 4 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 2 2 2 2 8	1 2 2 2 4 4 2 8 8 8	1 2 2 2 2 8	1 2 2 2 2 8	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 2 2 2 2 2 8
Sampled by: A	H d	5 7.37		8 7.59		10,000			1000 1000 1000									
0.0000000000000000000000000000000000000	Volume Temp Purged C (L)	27.6		5 20.8	Value 1	Villa -	Var. 2											
	Stickup Volu (m) Purg	1		2.5	4 4	0 1 0	104	7 20 2	7 2 5 4	7 7 0 2 0 1	7 7 0 2 1 1 1 0	1 2 0 5 11 4 0 5	1 7 0 5 0 1 0 0 1					
0	Water St Level (m)	100		7.30	7.70	7.70	7.70	7.70	7.70	7.70 7.70 7.70 7.70 7.70 8.53	7.70 7.70 7.70 7.70 7.70 8.89 8.83	7.70 7.70 7.70 7.70 7.70 8.83 8.53 8.53	7.70 7.70 7.70 7.70 7.70 8.53 8.53 8.54 8.53	7.70 7.70 7.70 7.70 8.83 8.53 8.53 8.53	7.70 7.70 7.70 7.70 8.83 8.53 8.53 8.53	7.70 7.70 7.70 7.70 8.83 8.53 8.53 8.53	7.70 7.70 7.70 8.53 8.53 8.53 8.53 8.53	7.70 7.70 7.70 8.49 8.53 8.53 8.54 8.54
Date. 18. 7.2011	Time	7:70		2:57		N 1.				N 1. 1								
7	Type + Container Depth * Additive								17-57	<i>Ls.11</i>	17-57	17-57	<i>L5-11</i>	L5-//	25-//	25-//	25-11	15:11
Job No: 2/0074	Sample To	guzy.							11 KAMS									



Field Chemical Characteristics for Water Samples pungsitud am Broc.

EARTH SCIENCES
THE KNOW AND THE HOW

Casusita Parte, Pt. Mello	Comments	GCOM.	Reduced to 2. due holowoodo							Shoped & would broadang			Sampled at 10:50	Ath rampling.	0	X.	Field Parameters Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669) ±10% to No when >1ppm (no criteria for<1ppm) ±10% to Linbidity ±3% EC ±10% VORP ±10M VORP manufacturer's specifications
CC Site: Cu	Colour	douby brown	0														Field Parameters Field parameters will be measured ex-situ in it from EPA Victoria Publication 669) ±10% LD when >1ppm (no criteria for<1ppm) ±3% EC ±10% DN PAPP ±10m V DNP The meter will be calturated every three bores manufacturer's specifications
T-Up	Odour			nore	4 nove				nove								F F F F F F F F F F F F F F F F F F F
ROFE	uScm.1	992 pm	Liberak	0.20 1053,1k none	913pm	285 pm	832mr	189	985	948	七〇	8001	1319	12:14	2157		Sampling Container PI = Pclyethylene G = Amber glass
Client:	Dissolved Oxygen (ppm)	1.93	0.24	0.30	0.10	0.3	0.23	0.5	46.0	0.3	01/0	0-31	0.39	0.35			Sampling PI = Pclyel G = Ambel
13/12	рн ре шУ	99 180	31-5	7.30 -5	76-4	1-23-7	1.20-10	13-41	1.03 -30	6.97 -22	9- 66	6.97 -1	7.03 3	6 60			Sampling device B = Baller P = Piston S = Spring SP = Submersible pump GD = Gas drive GL = Gas lift FD = Positive displacement G = Grab
7	Temp	9.50	(t.b)	M.S 7.	19.8 7	19.8 7	19.3	19.87	20.00	19.9	0 14	19.6	19.5	19.37			Sampling device B = Bailer P = Praton S = Spring SP = Submersible pump GD = Gas drive GL = Gas drive EL = Suchion lift PD = Positive displacemen G = Grab
Sampled By:	Volume Purged (L)			ø.	220 L	=321	1437	230L	~31L	45×	238	540	かれか				
\$1.	Stickup (m)			0	+	7			8	0	7	c	2	5			Type SW = Surface water SWC = Creek SWC = Pond SWD = Dand SWL = Puddie GW = Coundwater GWA = Artesian GWS = Sub-artesian
18.4.	Water Level (m)	2 7.10	0 7.26	7.26	17.23	7.27	1.31	7.35	7.38	7.40	7.43	37.43	A7.42	8			Type SW = Surface SWC = Creek SWP = Pond SWD = Dan SWL = Podde GW = Ground GWA = Artesia
Date: / §	Time	025	0956	(003	1009	1013	10/8	10,24	1030	1034	1039	10:43	10-14	1108			
Job No: 2/1074	Type + Container Depth + Additive	10.95															Additives W = no additives X = cone. HNO ₂ Y = NaOH Z = Na ₂ S ₄ O ₃
Job No:	Sample Tyr No De	GW3110.															Key X X X X



Job N	10:211	Job No: 211074 Date:		1/1/81		Sampled By:	d By:	LB		Client:	Portp	Client: Port Phillip C.C	Site:	Cours to Pake
Sample	Type + Depth	Container + Additive	Time	Water Level (m)	Stickup (m)	Volume Purged (L)	Тетр	H	pe mV	Dissolved Oxygen (ppm)	EC.	Odour	Colour	Comments
GW3310.29	10.29		135	7.22		3	221	76.9	26	4.23	7.12ppk	S none	doudy Brown	Perts 51th & lattom of well
			1230	7.32		ナ	9,7	7.5	89	6.20	5.64	\	7)	4 CPM - Chood rectionage
			1335	7.33	8	100	19.6	137	73	7.09	3.72	1	7. E.	
			1340	7.33		2000	19.6	727	16	6.83	3.44	4	4	
			1245	7.32		101	19.61	7.37	44	6.87	3.50			
			1350	7.33		BL	19.5	FEE!	75	6.70	3.60			
			1255	735		79	19.5	7.23	70	6.70	3.66	2017		Sanpled @ 1255
GWG	1W69.68		4400	6.8		77	20.b	46.9	92m	4.61	D82,000	1882 ppm earthy	Cloudy Brown	
			1405	6.9		18h	Do ct	46.9	89	4.61 1247	(343	0	D.	
			1410	8-9		10	20.0	6.97	16	3.85	1220			
			1415			14 6	20.00	44.9	93	3.61	6611			
			1430			791	20.0	t6-9	26	339	1167			
											3461			
Key	Additives X = conc. HWO, Y = NaOH Z = Na ₂ S ₂ O ₃	s ddiives HNO ₃ H ,O ₃		Type SW = Surface water SWC = Creek SWP = Pond SWD = Dam SWL = Puddle GW = Groundwater GWA = Artesian GWA = Sub-artesian	ace water eek. nd nn nn Jdle Jdle nawater esian b-artesian		Sampling device B = Basilor B = Basilor S = Spring S = Supring GD = Gas drive GL = Gas filt SL = Suction lift PD = Postitive disp	Sampling device B = Baster P = Paster S = Spring S = Submersible pump GD = Gas drive GL = Gas tift FD = Postive displacement G = Grap	d Men	Sampling PI = Polyo G = Ambe	Sampling Container Pl = Polyethyleno G = Amber glass	File from \$10 \$10,	Field Parameters Field parameters Field parameters will be measured ex-situ in it from EPA Virteria Publication 669) ±10% DO when >1ppm (no criteria forc1ppm) ±10% EV ±10% EV ±10% FV ±10M VRP The meter will be calabrated every tivee bores manufacturer's specifications	Field parameters Field parameters will be measured ex-situ in in-tine flow cells with the following stabilisation criteria (adapted freet EPA Victoria Publication 669) ±10% DO when >1ppm (no criteria for<1ppm) ±10% DO when >1ppm (no criteria for<1ppm) ±20% EQ ±30% EQ ±30% DO RP ±10mV ORP The melter will be calabrated every three bores or daily (whichever occurs first) in accordance with the manufacturer's specifications



Job	Job No:20074		Date: 18	Date: 18 #214 2011		Sampled By:	ed by:	2		Client: CA	City	アナゲー	- Phillip Site:	Site: Oarthy/ Borne Yas norkes
Sample	Type + Depth	Container + Additive	Time	Water Level (m)	Stickup (m)	Volume Purged (L)	Тетр	H	Vm eq	Dissolved Oxygen (ppm)	EC uScm ⁻¹	Odour	Colour	Comments
50N35	5 10:7m		12:35	6.86m										insact pump Set 6.87m
			h	6.75	q	5.0	223	601	-33	3.22	99.11	No alest	todil (sour)	, , ,
			56:11	6.34	1	0-/0	8.07	7.10	04-	3.24	12.17	No oder	u u	٠
			15:21	46.9	q	2.0	7.07	1.1	2	3.82	08.6	No about	n	**
			(pm	46.9		5.	0.00	7.20	64-	3.24	18.9	No orlean	;	ı
			hidor 1	6.85		24	19.9	7.27	-80	3.57	6.50	•	ŧ	**
			Water!	56.9	M ST	01 *	6.3	7.27	-70	3.10	7.21	11	1	1
											21021	و		
Kay	Additives W = no additives X = conc. HNO ₃ Y = NaOH Z = Na ₂ S ₂ O ₃	ss addilives 1. HNOs 1.05,		Type SW = Surface water SWC = Creek SWP = Pond SWD = Dam SWL = Puddle GW = Groundwater GWA = Artesian GWS = Sub-artesian	ace water nd nd fate andwater esian b-artesian		Sampling device B = Bailer P = Piston S = Spring SP = Submersible GD = Gas lift SL = Gas lift SL = Suction lift PD = Positive dis G = Grab	Sampling device B = Bailer Pston S = Spring SP = Submersible pump GD = Gas drive GL = Gas lift SL = Suction lift PD = Postlive displacement G = Grab	ngo traent	Sampling PI = Polye G = Ambd	Sampling Container PI = Polyebylene G = Amber glass	Field from #100 #100 #100 #100 #100 #100 #100 #10	Field Parameters Field parameters will be measured ex- fred parameters will be measured ex- from EPA Victoria Publication 669) ±10% DO when >1ppm (no criteria for ±3% EC ±30% EC ±10MV ORP The meler will be calibrated every thre manufacturer's specifications	Field Parameters Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669) ±10% LDO when >1ppm (no criteria for-1ppm) ±3% EC ±10% Turbidity ±30% Turbidity ±30% PD ±10% Turbidity 100% pH ±10% VORP The meter will be calibrated every three bores or daily (whichever occurs first) in accordance with the manufacturer's specifications



	JOD NO: 20074		Jate: /	Date: /8-9 -2011	11	Sample	ed by:	Sampled By: Menes	•	Client, co/	2000	11/11	alle sile.	ing of the miles and prominent forms of the
1111	Type * Depth	Container * Additive	Time	Water Level (m)	Stickup (m)	Volume Purged (L)	Temp	Н	De mV	Dissolved Oxygen (ppm)	EC uScm ⁻¹	nopo.	Colour	Comments
		A	09:01	2.46		0								
		Î	1100	77:46		5.0	4.02	46.9	621	18.1	2.94	110 odos 1	Light bown	2 cycles amin
			01:11	7:56		1.5	202	6.87	63	1.24	5.13	e	>	reduced to I welve
			11:20	1:06		5.7	21.7	639	4972	60.1	3.00	*	,,	, ,
			05:11	2:00	***	3.5	7.4	10.1	74	111	2.99	4	**	"
			04:11	11-1	R	45	21.1	70:1	47	181	2.83	4	1	Super proging allowed to rectory
			1.50	15:2		5.92	2/7	10.2	74	98.1	18:7	"	11	John State of the
											746			
_														
	Additives W = no additives X = conc. HNO ₃ Y = Na ₃ S ₂ O ₃	Minutes HNO ₃		Type SW = Surface water SWC = Creek SWD = Dam SWL = Puddie GW = Groundwater GWA = Artesian GWS = Syb-artesian	Type SW = Surface water SWC = Creek SWP = Pond SWD = Dam SWL = Puddle GW = Groundwater GWA = Arteslan GWS = Syb-arteslan		Sampling device B = Baller P = Piston S = Spring SP = Submersib GD = Gas drive GL = Gas drive GL = Gas drive GL = Positive of	Sampling device B = Bailer P = Prston S = Spring SP = Submersible pump GD = Gas drive GL = Gas filt SL = Gas filt SL = Suction III SL = Suction III SL = Postilive displacement	np ment	Sampling PI = Polye G = Ambe	Sampling Container PI = Polyethydene G = Amber glass	Fig. 170 Fig	Field Parameters be measured on free parameters will be measured on from ERA Victoria Publication 669) #10% (Do when >1ppm (no criteria fo #30% EC #20.5 ph #100W OPP The meter will be calibrated every thn	Field Parameters Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669) #10% Turbidity #25% EC #10% Turbidity #10% VORP #10% VORP #10M VORP #10M VORP The meter will be calibrated every three bores or daily (whichever occurs first) in accordance with the

DUP #2 \$ SPUTEZ = GW28



11.1	Field Chemical Characteristics for Water Samples	nical C	haracte	erist	ics fc	ır Wa	ter Sa	ample	S			EARTH SCIENCES THE KNOW AND THE HOW	
5-4	Job No: 211074	Date:	11-4-61	Sa	Sampled By:	3y: LB	8	Client:		Port Philip C	. C. Site: C	Gasworks park	П
Sample	ple Type+ Container Depth + Additive	mer Time	Water Stick Level (m)	Stickup Vo (m) Pu	Volume Temp Purged C (L)	Hd du	Λω ad	Dissolved Oxygen (ppm)	EC uScm ⁻¹	Odour	Colour	Comments	
35	GWZB 10-30	101400	10 1400 7.93		1 30	20.8 7.96	6 93	45.4	4.54 1215pm More	None	dear	Chood Recharge.	
Daso	2 solit2	1415	1415 8.00	36		19.9 7.8	7-89-105	4-83	4-83 1210pm	* 5	4	GCPM	
	,	1430		10	PL 19	19-8 7-84	1-109	4-67 1214	1214				
		1425		80		111-25-5	111-+	1221 27.4	1221				
X	sale 2	NA 160G							2075	35	h		
GWZ7	(1) 4/02)	10 0000 0.12	0.12	_	18.9	CI.C 6	53	3.26	3.26 3.49pbk	k none	clear	2cpm.	
	2	01.0	8.33	20	F817	からす	26	2.97	3.49	Poss			
11,		815	834	16	SI 18	10 L 187 7.26	91 9	3.49	3.49 3.56	, , , , , , , , , , , , , , , , , , ,	5		
14		0.00	Hr. \$ 0280	1	14L 118.	18-6 7.29	1	3.67	3.49	2817		Sauged @ 0835	
OC WS	GW36 10-41	0445	7.21	- 1	1 16	16.7 7.33	8 130	Sept.	7827	fork nove	Clear/cloudy		
7		0857.38	7.38	SL		18.06.85	5 143	3.69 ml 136 mu	136g	ĸ	0		
		Caso 7	07.39	-	2L 18	18.16.90	0 129	3.42 1.81	1.81	.1			
		(000)	7-42	18	181 (8.	(8.1 6.98	8 115	3.44 2.76	2.76			Wait be reclose due to	
		1005 7.39	7.39	2	21 18	17.0	224 18-17-03/104	3.35	3.35 3.09		8 5	SUL DIOP.	
		0101	1010 3-42	261	\ \	18-1 7-08 98	8 98	3.24	3.30				
		301	3.41	32	28 / 18	18-1 7-10	0 93	3.27	3.27 3.27	5450		Sampled at 1015	
3	Antolistican		4		- 6	section desired		Campillan	The section is a second	1415			Γ

			4
Xey	Additives	Type	Sampling device
	W = no addisves	SW = Surface water	B = Bailer
	X = conc. HNO,	SWC = Creek	P = Piston
	Y = NaOH	SWP = Pond	S = Spring
	Z = Na ₂ S ₂ O ₃	SWD = Dam	SP = Submersible pump
		SWL = Puddle	GD = Gas drive
		GW = Groundwater	GL = Gas Ht
		GWA = Artesian	St. = Suction lift
		GWS = Sub-artesian	PD = Positive displaceme
			G=Grab

ling Container	olyethylene	mber glass	
Samp	d=Id	G=A	

Field parameters will be measured ex-situ in in-time flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 659)

±10% Do when >1ppm (no criteria for<1ppm)

±3% EC

±10% by

±10% Vol.

±10mV ORP

The meter will be calibrated every tivee bores or daily (whichever occurs first) in accordance with the manufacturer's specifications

placement



					1 =	20									
Site: Gas Lothe Park	Comments				lige water has hywocedon shee	Sandred at 1640. (ESU		7.9							Field Parameters Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA victoria Publication 689) Field DO when >1ppm (no criteria for<1ppm) 43% EQ 40% EQ 40% EQ 410M ORP 410M ORP The meter will be calibrated every three bores or daily (whichever occurs first) in accordance with the
١	Colour	Darkelordy	1 0 111												Field Parameters Field parameters will be measured ex-situ in it from EPA Victoria Publication 669) ±10% LO when >1ppm (no criteria for<1ppm) ±30% EC 40.05 pH ±10.05 pH ±10.00 PH manufacturer's specifications
Port Philip ce	Odour	hydrocery	5 5 5			10	0	,							
	uScm't	3.64	2.25	3 2-3	8 2.35	2.23	37								Sampling Container PI = Polyethylene G = Amber glass
Client:	Dissolved Oxygen (ppm)	0.93	51.0	85.0	0.48	0.4								_	Sampl PI = PC G = An
26	pH pe mV	CC- t9.9	6-68-75	6-69-78	6.70-85	6711-9									Sampling device B = Bailer P = Piston S = Spring SP = Submersible pump GD = Gas drive GL = Gas lift SL = Gas lift SL = Suction lift GD = Grab
-	Temp	18.16	18.16	1.81	18.1	18.1									Sampling device B * Baller P = Piston S = Spring SP = Submersible GD = Gas drive GL = Gas lift SL = Suction lift PD * Positive disp
Sampled By:	Volume Purged (L)	5	0	45	30	25					4				
11:0	Stickup (m)										,				Type SWC = Creek SWC = Creek SWD = Pond SWD = Dand SWL = Puddle GW = Groundwater GWA = Artesian GWS = Sub-artesian
2.4	Water Level (m)	1630 8-15	1625 8-13	630 8.36	1635 8.35	6408.34									Type SW = Surface SWC = Creek SWP = Pord SWD = Dan SWL = Puddle GW = Ground GWA = Arfesti GWA = Arfesti
Date:	Time	1630	[625	1630	1635	1641							of a		
Job No: 21/074 Date: 20.4-11	+ Container h + Additive	9													Additives X = conc. HNO, Y = Najol. Z = Najol.
2.0N C	ole Type + Depth	2W39 10-56								5					% = X = X = 2 = 2
Joh	Sample	3													Key



Job No: 211074 Date:	+t011		20.4.11		Sampled By:		73		Client:	Port	Phili.	2 . C.C. Site: 2	Client: Port Phillip. C.C. Site: Casuartes Park.
Sample Type+ No Depth	Container + Additive	Time	Water Level (m)	Stickup (m)	Volume Purged (L)	Temp	H	De mV	Dissolved Oxygen (ppm)	EC uScm'1	.nopo.	Colour	Comments
GW2 8-81		1130	8.17	2	Sould	Lud	5	Samp	(e)	not	enough	not enough 40 column	Leste mells the cen strek
GW490 17.67	t	150	8.87		1	17.5	17.5 6.18	37	3.43	7.33 RPK	Organic	Dark greylpu	7.33 px Organic Dark grey/pulple - Very dark - no sediment
		1200	(Rep 8.95		4	18.3	18.3 6.55 19		2.42 7.62	7.62	(I		Some frothing in
12		1210 8.96	8.96		(6)	13.6	18.9 9.81	91	2.22 7.82		cs h		6cpm . prograch
		1215	12158.97		35	9.81	18.6 6:68 12	^	2.02 7.43	7.43			very story octour.
	2	1220 8.	00		35	35 18.6 6.59	6.59	.6	60.0	12383	283		Sample times yellow when
								5.		1		1	with Hel, acid.
	4												and to All bother you
W5 8.90		\$4008.0	08.60		No	+	enough		water columns	hump	- to sample	mole	Kothi
GW15 12-57	4	1435	1435 9.10		一	1796	179 544	208	4.17	4.17 359ppm nore	Nore	daudy over 1 brown	bown Capm
	Ÿ.	1430	1420 9.10		5	1821	2.47	J. B.	825-47213 246345	345			
		143	1445 9:10		10	1.81	18.1 5.59 205	305	1.92 333	333			
		14509.11	9.11		15	1-81	5-74	19	18.15.74 197 2.07 332	332			Sample collected of 1455
										= 553 ms/cm	usten		
													The state of the s
												4	a s
Key Additives	son		Type			Sampling	g device		Sampling	Sampling Container	Fig	Floid Parameters	
	W = no additives X = conc. HNO,		SW = Surface water SWC = Creek	ace water sek		B = Baller P = Piston			Pt = Polyethylene G = Amber glass	r class	Fie	d parameters will be measured ex n EPA Victoria Publication 669)	Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adopted from EPA Victoria Publication 669)

y		
	Additives	Type
	V = no additives	SW = Surface water
	< a conc. HNO,	SWC = Creek
	/ = NaOH	SWP = Pond
	Na.S.O.	SWD = Dam
		SWL = Puddle
		GW = Groundwater
		GWA = Artesian
		GWS = Sub-artesian

DOLLAR BUILDING	B = Bailor	P = Piston	S = Spring	SP = Submersible pump	GD = Gas drive	GL = Gas lift	St. = Suction lift	PD = Positive displacement	G = Grab
	a water				ie.	dwater	ian	artesian	

Sampling Container	Field Parar
PI = Polyethylene	Field param
G = Amber glass	from EPA V
	±10% DO v
	±10% Turbi

F 1010 F 41411101013	
Field parameters will be r	rameters will be measured ex-situ in in-line flow cells with the following stabili-
from EPA Victoria Publica	
±10% DO when >1ppm (no	luom)
±10% Turbidity	

^{±3%} EC. ±10.05 pH ±10.01 or the plant of the calibrated every three bones or daily (whichever occurs first) in accordance with the manufacturer's specifications

4000

Field Chemical Characteristics for Water Samples

EARTH SCIENCES
THE KNOW AND THE HOW

3

SPAT

Selling brown

MONE

358

5

3.8

215

Comments

くるらいのへれ

Site:

Colour

Odour

EC uScm.

Dissolved Oxygen (ppm)

Уш од

표

CC

Volume Purged (L)

Stickup (m)

Water

Time Date:

Container + Additive

Type + Depth

Sample

Job No: 210074

Client:

Sampled By:

3

20

5mg

¥

Tes

=

Jough

30 WC

0.78 7.25

825/18 6.20 577

9

3,25 3.20

7,60

3.30

6.24

575

25718122

100

3.58

41.0

100

\$ 21.8

50

200

35

SW25

00

20

loude

Slisty PAH

2.202.53

6.51

21.5

15.0

7.43

97

100 cos

7

3

7.61

12:0

J

Server

Lines.

×

=

0.0

6.28 372

5-7213

1.64

子

1880

1

v

4

3.50

0.08

6.28

4

3.35

50

0.07

6.25 572

218

50

7.40 7.64



Sampling device

Type SW = Surface water SWC = Creek SWP = Pond

W = no additives X = conc. HNO₃ Y = NaOH Z = Na₂S₂O₃ Additives

Key

SWD = Dam

Field Parameters

B = Bailer S = Spfing S = Spfing GD = Gas drive GL = Gas lift SL = Suction IIR PD = Positive displacement G = Grab

Sampling Container PI = Polyethylene G = Amber glass

Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669)
±10% DO when >1ppm (no criteria for<1ppm)
±10% Turbidity

.

7 :

- =

1.50

02.0

0.0

50

£

2,51

6.13

787

5.94 3 94

7-7-5

7.50

30

147

3

-

3

¥

C

=

Mark

2.8

570

40

477

00.9

6.0

71.7 21.8

3.4 4:8

7.4

0.52

487

6.18

3.12

2.5

7.4

4.76

7.45

52.7

±3% EC ±0.05 pH ±10mV ORP

The meter will be calibrated every three bores or daily (whichever occurs first) in accordance with the manufacturer's specifications



SWL = Puddle GW = Groundwater GWA = Artesian GWS = Sub-artesian



										,							
GABWOCK,	Comments	comy	CAMI	4M2	11	() base it	M Benos	SANDED		Emso	COMMZ	1	*	Symples			Field Parameters Field parameters with the measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669) Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria forstppm) #3% EC #3% EC #30% EV #30 PA #30 AD pH #30 AD PA #3
Site: 6	Colour	cleucin	040m	5	٧٠		p. c	3.6	{	clouds	claga	۲	1,	1			Field Parameters Field parameters will be messured ex-situ in it from EPA Victoria Publication 669) #10% DO when >1ppm (no criteria for<1ppm) #2% EC #10% D bH #10M V DBP #10M V DBP The meter will be calibrated every three bores manufacturer's specifications
COPP	Odour	3-99 15 Hopers 160	11	13	33	11	1,	5	1	hylogiston	10	<u>ب</u>	3	3	1		Field Parama Field parame from EPA Vic ±10% Tutbid ±3% EC ±0.05 pH ±10mV ORP The meter w manufacture
7	EC.	3.992	5.77	3.75	3.75	3.7	3.7	3.76	>		1837	2382	2307	2330	(Sontainer sylene glass
Client:	Dissolved Oxygen (ppm)	265	6.37	2.0	6.7	D.14	6.20	87-0	1	6230 1807	0.885	28.0	6.50	027	5		Sampling Container P! = Polyethylena G = Amber glass
	Vm eq.	348	67	9	28	55	55	29	(18	02)	1/8	181	130	>		op ment
马	Hd	5.96	6.53	5.58	5.59	5.9	5.59	6.8	{	5.55	6 4.32	5.28	5.28	5.28			Sampling device B = Baller P = Piston S = Spring SP = Submersable pump GD = Gas drive GL = Gas lift SL = Suction lift PD = Positive displacement G = Grab
Sampled By:	Temp	16.7	17.0	11	17.1	17.1	L	110	3	16.3	16.6	0,91	291	3.91 6.6	1		Sampling de B = Baller P = Piston S = Spring SP = Subme GD = Gas off GL = Suction PD = Postivo PD = Postivo G = Grab
Sampl	Volume Purged (L)	12	1-25	1.75	2.25	2.75	3.25	3.75	1	لم	-	13	N	2.5		1	
11/2	Stickup (m)														1	>	Type SWC = Creek SWP = Surface water SWC = Creek SWP = Pond SWD = Pond SWL = Puddle GW = Groundwater GWA = Artesian GWA = Sub-artesian
20/4/11	Water	7.67	7.72	7.75	7.75	7.75	7.75	37.75	\	KOX	200	8.10	8.10	8.10)	V	Type SW = Surface wate SWC = Creek SWP = Pond SWD = Dan SWL = Puddle GW = Groundwater GWA = Artesian GWS = Sub-artesian
Date:	Ттт	2E'OJ	10.40 7.72	10.45 7.75	16.50 7.75	16.5 7.75	N.300 7.75	10.1	(11.40	11.45	11.50	11.54	17.00		0 +	
	Container * Additive	\							5)	1	ddilves HNO, C
Job No: 710074	Type + Depth	10							1	1					>)	Additives W = no additives X = conc. PNO ₃ Y = NaOH Z = Na ₂ S ₂ O ₃
Job N	Sample No	GEIR							(CWI					3	anis	Kay



CASWORK)	Comments	GM3	-	COMZ	*	1,1	SAMPLED		GW3	CPMZ	CPM	COMIL	2	۵	SAMPLY	Field Parameters Field parameters Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from 19% Turbidity) Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted 19% Turbidity) Field parameters will be criteria for<1ppm) Field parameters Fie
Site:	Colour	clear	11	-1	==	ii.	1		who clouds)	**	0.1	i,	1,	J*	Field Parameters Field parameters freed parameters will be measured ex-situ in it freed parameters will be measured ex-situ in it freed parameters will be measured ex-situ in it a10% Du when >1ppm (no criteria for<1ppm) a1% E10% Do when >1ppm (no criteria for<1ppm) a1% E10% Do when >1ppm (no criteria for<1ppm) a1% E10% Do when >1ppm (no criteria for<1ppm) A10% ORP The meter will be calibrated every three bores manufacturer's specifications
de	Odour	sighthate		14.	2	=	11		7265 slight hydender	i i	,	3	11	1,	3	Field Part fred para from EPA ±10% DD ±10% Tun ±10% Tun ±10% Tun ±10m V OD The meter
Copp	EC uScm'1	13163	1175	1811	1192	11.96	199	1	1265	222	2224	2234	225	270	2269	Container hylene glass
Client:	Dissolved Oxygen (ppm)	4.25	2.85	2.8)	2.57	2,00	2.48		\$ -	1.21	8.18	22.0	0-67	99.0	970	Sampling Container PI = Polyethylene G = Amber glass
	λω ad	149	60%	833	633	1	- 00		716	499	1	364	350	260	798	ump sement
中	Hd	5.35	5.22	5.60	5.89	5.91	5.90		81.9 9.81	6.45	6.32	6.77	6.0b	6.05	10.0	Sampling device B = Basier P = Pstion S = Solomersible pump GD = Gas drive GL = Gas tift SL = Suction fift PD = Positive displacement G = Grab
Sampled By:	Temp	17.6	17.0	8.7.	17.9	17.01	180		9.81	17.9	17.8	5 178	11.8	2.2517.9	\$25 178	Sampling B = Baller P = Patton S = Spring SP = Subn GD = Gas GL = Gas FD = Fost
Samp	Volume Purged (L)	lo.		1.5	7	2.5	M	-	10.	_	Pris	1.75	200	7	28	
Date: 20/4///	Time Water Stickup Level (m) (m)	12.45 8.16	12.30 8.26		min 928	82 4 50.	1,10 9.30		2.25 8.78	2.30 8.45		Z.40 8.92	2.45 8.95	2,50 8.95	2.55 8.95	Type SW = Surface water SWC = Creek SWD = Pand SWL = Puddle GW = Goundwater GWA = Artesian GWS = Sub-artesian
Job No: 210074 D	Type + Container Depth + Additive)														Additives W = no additives Y = conc. HNO ₃ Y = Na ₃ S ₂ O ₃
Job No	Sample	GW22							CW21	-						Key

PROJECT FORMS\SF36 Field Chemical Characteristics for Water Samples

±10mV ORP The meter will be calibrated every three bores or daily (whichever occurs first) in accordance with the manufacturer's specifications



1	TTOIN ON DOS		ate:	Date: 17・4・11		sampled by:	ed by.	4		200	Lort P	Dient: Fort Philip 7.7		olle. Las works Far R
Sample	Type * Con Depth + Ad	Container + Additive	Time	Water Level (m)	Stickup (m)	Volume Purged (L)	Temp	H	De mV	Dissolved Oxygen (ppm)	EC nScm.	Odour	Colour	Comments
雪	- F2018	\	08108-12	8.12		_	£-81	25- 26-9 4-81	-26	3.54	3.54 2.38ppk	k Cloudy	organico	4 com pumprede
-14			0815 8.30	8.30		25	M.o	7.05	-63	2-89	2.35	0		
			0830	0830 AMMEG. 30	30	ال	6.61	7.07-	69	2.87	2.33			
			0835	0300		191	18.9	7.08	-69	2.30	2.32	2.32 : 1866 not		Sampled. @ 8.45
W8	GW89.40		0830	TP. 97		41	19.0	68.9	-5	2.25	2-36 ppl	John Clouchy	It I noisdow	No odow only adjact
			0935	8-13		9	19.3	6.71	-24	1.33	2.35			500 D
			0940 8.12	8.13		36	19.3	19.3 6.69	-13	30.93	30.98 2.36ppt	-1		2cpn pump rate.
			5460	8-12		POL	7.6	6.43	14-	0.43	2.38			
		~	0950 8-12	8.12		121	19.2	6.34	-51	0.35	2.39			
		J	0955 8-12	8-12		141	19.2 6.39		ts-	0.37	0.37 2.40			
			1000 8.12	8.13		791	19.3	6.36	19-	0.90	2.40 4000	4000		Sampled at 1005
CEME	Man	05/194-016	130	7.16	1	1	1.1	7.72	52	4.30		904 ppm none	cloudy brown	your pumpiate
)		1135 7.30	7.30		7 7	13.9	7.87	4	6.31	6.31 924			Roduced to 2 cpm
			1140	7.31		61	18.9	7.84	-	5.36	923			Reduced + 1 cpm
			1145	7.31		8 L	19.0	7.80	+	5.13	924			Slow Recovery of
			1150	7.30		101	19.0	7.69	4	4.93	4.93 927 1545	5451	Clear	Sampled of 1155.
Key	Additives W = no additives X = conc. HNO ₃ Y = Na ₂ O ₃ Z = Na ₂ S ₂ O ₃	8.5		Type SW = Surface water SWC = Creek SWP = Pond SWD = Dam SWL = Pudde GW = Groundwater GW = Groundwater GWS = Sub-artestan	SW = Surface water SWC = Creek SWD = Pond SWD = Dam SWL = Puddle GW = Groundwater GWA = Artesian GWS = Sub-artesian		Sampling device B = Bailer P = Piston S = Spring SP = Submersit GD = Gas fift GL = Gas fift PD = Positive di G = Gratin	Sampling device B = Bailer P = Piston S = Spring SP = Submersible pump GD = Gas drive GL = Gas filt SL = Suction lift FD = Positive displacement G = Grasi	Qt tream	Samplin PI = Poly G = Amb	Sampling Containor PI = Polyothylene G = Amber glass	1mm c 4 4 4 11 11 41 2	Floid Parameters Field parameters will be measured ex-silu in it from EPA Victoria Publication 669 #10% DO when >1ppm (no criteria far<1ppm) #10% Turbidity #10% Turbidity #10% OF #10M ORP The meter will be calibrated every three bores	Field Parameters Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669) #10% Do when >1ppm (no criteria (ax-1ppm) #10% Do when >1ppm (no criteria (ax-1ppm) #10% Tubilidity #10M ORP The meter will be calibrated every three bores or daily (whichever occurs first) in accordance with the manufacturer's specifications.



0		Date: 20-4-11	11-4-6	Chicken	Sampled By:	ed By:	B	Vm an	Client	Client: 600	Odosit	Site: 3	Comments
-	Container • Additive	Time	Water Level (m)	Stickup (m)	Volume Purged (L)	c c	Hd	Am ad	Oxygen (ppm)	uScm."	Odour	Colour	Comments
-			800										
-			7.90	die	0.5	9.8/	04.9	64-	2.73	3.3/ppt	K Lydra.	light from	2 cm/e gmin
-			01.8		1	18.1	45.9	-68	1:11	3.32	,	× ×	1 excle plain
_			8.10		7	9.8	55.9	12-	81.1	3.33	4	4	1 " 1
			80.8		8	18.7	95.9	2/-	817	5.32	Ł	4	
			11.8		4.5	9.81	634	-73	81.1	3.33	5	v	ı
										288	0		
1						18.6	520	185	2.83	558M	Ma	14/1 bon.	". Su led dry " 2th
										= 930mcm	r-m	5	1 Supled on 2
1													
W = no ad W = no ad Y = Nach Z = Nach Z = Nach	Acatalyses X = conc. HNO ₃ Y = Na ₂ S ₂ O ₃ Z = Na ₂ S ₂ O ₃		SW = Surface water SWC = Creek SWP = Pond SWD = Dond SWD = Dan SWL = Puddle GWA = Arterian GWA = Arterian GWS = Sub-ertesian	ek, ek, n n n ndwater ndwater ndwater ndwater		Samping B = Baller P = Piston S = Spring SP = Subm GD = Gas II SL = Suche Posts	Sampling device P = Bailer S = Spring SP = Submersible pump GD = Gas drive GL = Gas tiff SL = Suction tiff PD = Positive displacement	mp	Sampling Contain P1 = Polyetrylene G = Amber glass	sampung vonaner Pl = Polyethylere G = Amber glass	5 5 5 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	Field parameters will be measured ex-situ in it fred parameters will be measured ex-situ in it frem EPA Victoria Publication 669) ±10% Lubidity ±10% Tubidity ±10% Tubidity ±10% Different of the parameter will be calibrated every throe bores	Field parameters will be measured ex-situ in in-time flow cells with the following stabilitation criteria (adapted free EPA Victoria Publication 669) ±10% LOD when > 1ppm (no criteria for<1ppm) ±10% Turbidity ±10% EC ±10.5 pH ±10mV OR P



No.	2		_	oampie	ed by:	Sampled By: A. SAMES	3	Clent		1	oite:	Jack Nots Joseph
	Time	Water Level (m)	Stickup (m)	Volume Purged (L)	СС	H	be mV	Dissolved Oxygen (ppm)	uScm.1	Odour	Colour	Comments
	1	7.30										
	7	7:37		1	18.2	6.47	159	3.78	9.81	who along	chan	40ycle plan
_		14.2		4	8.61	6.54	121	20.0-	19.0px	c No abon	" "	, · · ·
-	1	1.41		2	8.51	45.9	611	500-	0.61	11		"
	12	7.42		8	8 K	6.5%	180	-0.05	1-61	b	1)	3
									31833	33 or 3183		
	8	18.8										
		8.65		2	4.4	7.25	86	0.88	4.65pk	s about s	" rad-	2 couches for
	00	24.8		4	9.61	2.06	701	110-	84.5	7	¥	0
		8.55		0	19.5	7.08	801	61.0-	4.47	11	,	
	90	26.8		80	19.5	7.07	101	21.0-	4.47	11	//	
					11				2	So		
		7:15	-	7	70.4	6.45	88	2.16	304 pm	2	Hilf bown	3 cycle plan
-	18	7.77		4	20.3	09.9	98	7.5	Sol pres		12	
		7.81		5	7.07	94.9	84	10.4	309		h	. 10
					20.46.47	6.47	8	3.65	310pm	LIS	"	
		Type SWC = Creek SWP = Pand SWD = Dan SWU = Juddle GW = Groundwater GWA = Artesjan GWS = Sub-artesian	I am el		Sampling de 8 = Baller P = Piston S = Spring SP = Submer GD = Gas dri GL = Gas dri GL = Gas dri GL = Cas dri GL = Cas dri GL = Cas dri GL = Cas dri	Sampting device B = Bailer P = Phston S = Spring SP = Schomersible pump GD = Gas drive GL = Gas frive GL = Gas frive GL = Gas frive CL = Gas frive	mp ement	Samplin PI = Poly G = Amb	Sampling Container Pl = Polyethylene G = Amber glass	Field From 100 ± 100 ± 3% ± 10.0 ± 10.0	Floid Parameters Field parameters will be measured ex-situ in it from EPA Victoria Publication 669) ±10% ADO when >1ppm (reforderia for<1ppm) ±2% EC ±10% DC ±10% ORP ±10M ORP The moter will be calibrated every three boxes	Floid Parameters Floid parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 659) ±10% DO when >1 ppm (rid-criteria for<1ppm) ±2% EC ±10% Turbidity ±10% Turbidity ±10% AU WRP ±10% AU ORP The meter will be calibrated every three bores or daily (whichever occurs first) in accordance with the





																П	1
RATA SITE: BUK Mells Garacks	Comments	XX		4.076	,",	4	2			"	1	5	2000	5.			Field Parameters Field Parameters Field Parameters Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669) ±10% DO when >1ppm (no criteria for<1ppm) ±10% DO when >1ppm (no criteria for<1ppm) ±10% DO when >1ppm (no criteria for<1ppm) ±10% DO pH ±10% DO pH ±10m (no criteria for<1ppm) ±10m (no criteria for<1ppm) The meler will be calibrated every three bores or daily (whichever occurs first) in accordance with the manufacturer's specifications
Sillip Site: So	Colour			light brown	")	10	"			"	"	3	"	**			Field Parameters Field parameters Field parameters will be measured ex-situ in it Field parameters will be measured ex-situ in it 10% DO when > 1ppm (no criteria for<1ppm) 110% Tubildity 120% EC 12.0.5 pH 110m Moley W ORP 110m Moley Specifications
PAFA	Odour			No who	,,	11	+			8	"	25	"	1			Field Par Field Dave From Epac ±10% Do ±10% Tu ±005 pH ±10mV O Tife meter manufact
City of	escm.,			883	40.4	11.6	8.00	1,500		1084	994	853	166	866	[99]		Container lykene glass
Client:	Dissolved Oxygen (ppm)			425	85.4	4.56	82.5			5.75	54.4	4.37	4.03	3.77			Sampling Container PI = Polyethylend G = Amber glass
	pe mV			192	128	195	187			191	137 4	186	137	135			d.
M	PH.			2.06	1-0-1	3.09	2.08			11.2	10.8	25.7	7.88	82.L			Sampling device B = Baller P = Piston S = Spring SP = Submersible pump GD = Gas drive GL = Gas lift RL = Suction lift PD = Positive displacement G = Grab
Sampled By: A	Temp			19.5 7.06	19.6	9.61	19.7			2.81	14.5	7.61	19.2	7.5			Sampling d B = Bailer P = Pation S = Spring SP = Subm GD = Gas d GL = Gas E SL = Sucho PD = Positiv
Sample	Volume Purged (L)			7	4	6	00			1	4	2	8	10			
	Stickup (m)																ce water ek dd nn nn ndwater ndwater ndwater ndwater ndwater
1/4/11	Water Level (m)	2.89	15.1	7.53	7:55	7.56	45.2	- 1 - 500	68.2	1.78	78.2	7.85	7.84	48.4			SW = Surface water SWC = Creek SWP = Pond SWD = Pond SWL = Puddle GW = Groundwater GWA = Artesian GWS = Sub-artesian
Date: 20	Time		4							9:35	9:50	50:01	10:37	10:45			
	th * Additive		9														Additives W = no additives X = conc. HNO ₃ Y = NaOH Z = Na ₂ S ₂ O ₃
Job No: 20074	ole Type + Depth	0,	4 mg 10 46	-				- 2	41 10.94								Add X X X X X X X X X X X X X X X X X X X
Jok	Sample	gueso	500		40	a.			9W41								Key



Client: Chy of Pot Phillip Site: GW 10	Colour		low - bricloudy 2 com.	(a) /	3	14 44	clearest yellow We stabilising	med 31h Samples					Field Parameters Field parameters Field parameters Field parameters Field parameters Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669) #10% Do when >1ppm (no criteria for-Cippm) #10% Turbidity #30% EC #30.05 pH #10m ORP The meter will be calibrated every three bores or daily (whichever occurs first) in accordance with the manufacturer's specifications
34 plu	lour		to year	2	ż	4	= 25	Shight.					Field Parameters Field parameters Field parameters virtual at 10% DO when years £10% Turbidity £3% EC £0.05 pH £10mV ORP The meter will be the meter will be the meter will be the manufacturer's spe
1/0	, o		Ser					3					
Chy	EQ uScm-1		853	864	907	931	934	930					Container Ihylene r glass
Client:	Dissolved Oxygen (ppm)		3.31	8.55	3.79	3.35	2.79	7.ST					Sampling Container PI = Polyethylene G = Amber glass
	уш ed		225	227	230	230	327	228					p pent
X	Hd		4.73	4.86		5.04		5.03					Sampling device B = Bailer P = Piston S = Spring SP = Submersible pump GD = Cas drive GL = Gas lift SL = Suction lift PD = Positive displacement G = Grab
d By:	Temp		18.4	18.6		£.81	18.7 S.00	£.8					Sampling B = Baller P = Pistor S = Sprin SP = Sub GD = Gas GL = Gas SL = Such GD = Fars D = Pars G = Gas G = Gas
Sampled By:	Volume Purged (L)		7	B	3.5 18.7	3.	PA	5					
	Stickup (m)									200	N/		e water k e dwater dwa san san satesian
	Water Level (m)	8-14	8.23	825	8 26	8.29	8.31						Type SW = Surface water SWC = Creek SWP = Pond SWD = Dam SWL = Pudde GW = Groundwater GWA = Artesian GWS = Sub-entesian
Date: 20/4/	Time		% :0/			£5:01		95:0/					
	Container + Additive												INO ₃
3100	Type + Oppth +												Additives W = no additives X = conc. HNO ₃ Y = NaOH Z = Na ₃ S ₂ O ₃
Job No: 210074	Sample T												Key

Dup 4 (qiit 4?



3 3	Container	Date: 21/4///	Mater Water		Sampled By: KK	d By:	Y E	De mV	Client:	250	tot le	York Wallip Site: 5, W42(0)	W44(V) Comments
Depth	+ Additive		Level (m)	(m)	Purged (L)	o o	i.		(pbm)	mS/cm	9		
			8.32		1.5	1.5 17.2 6,15		05	3, 38	32.8	slight	Slightly fruits of	4 cpm. reduces to digm
		7.36	7.36cm 9.33		100	4			4	4	→	>	reduced to som
			09.6		8	17.8 5.88	2-88	163	2.17	36.0			
		7.50	7:40 10.06		3	17.8	5.85	191	2.19	36-2	3	3	fundence shaped to check
		2:50	10.30		pounsed	pa							
		8:14	10.16										
		8:35	8:25 10.10		rismed 28	red.	38	8:78	on o	20	10mm	16)	
		8.38	10.80		4	(3.0	91.9	125	3.58	33.6	nore	slightly trubid	water column de-waterny whe
			1.3		5	18.3	6.21	86	4.62	31.6	5	63	changed to I Gold
		3:13	9:12 12.57		+	18.2 6.24	6.24	89	4.66 31.3	31.3	47	3	Sampled now.
			190										
B - 022	Additives Wenditives Xeconc. HNO ₃ YendoH Zenack		Type SW = Surface \ SWC = Creek SWD = Pond SWD = Dond GW = Ground\ GW = Ground\ GWS = Sub-ari	Type SW = Surface water SWC = Creek SWP = Pond SWD = Dam SWL = Puddle GW = Grundwater GWA = Artessan GWS = Sub-artesian		Sampling device B = Baller P = Piston P = Spring SP = Submersib GD = Gas drive GL	Sampling device B = Baller P = Piston S = Spring SP = Submersible pump GD = Gas drive GD = Gas drive SI = Suction lift PD = Positive displacement	np mem	Sampling PI = Polyv G = Ambe	Sampling Container PI = Polyethytene G = Amber glass	프로 중 건 건 건 건 건 건 보는	Fleld Parameters Field parameters will be measured ex- fred parameters will be measured ex- fren EPA Victoria Publication 669) ±2% EC ±2% EC ±20.59 H ±10mV ORP The meter will be calibrated every three	Fleid Parameters Freid parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669) ±10% DO when >1ppm (no criteria for<1ppm) ±3% EC ±10% Tublidity ±3% EC ±10% Sph ±30% EN ±10m MRP The meter will be calibrated every three boxes or daily (whichever occurs first) in accordance with the



Job A	Job No: 20074		Date: P ##14	7124		Sampled By:		27, 14		Client:	5113	tot to	Site: Ju	Site: Juth Melborne Garanak 1
Sample	Type + Depth	Container + Additive	Time	Water Level (m)	Stickup (m)	Volume Purged (L)	Temp	Hd	νω ad	Dissolved Oxygen (ppm)	MS/Cm	Odour	Colour	Comments
543				88%										
			8.27	66.8		4	18.0	7.08	121	5.34	4. 64ms/cm	fund	Elevaly July	4 com
			8.32	80.08		8	17.9 7.35		44	8.78	4.29			
5			8:36	9.13		3.5	13.8		29	5.38	4.34	(amount)	shightly cloudly	3
			8.41	9.17		4.5	17.8	7.36	26	4.95	4.47	3	71 N	3cpM
			SALVA SALVA	9618		6.9	17.35		29	4.82		moderate	clear	
			8:50	9.17		8.0	17	77.39	34	4.86	4.75			
			8:36	9.13		9.0	17.7	7.39	33	4.79	4.49	3	ū	
Key	Additives W = no additives X = conc. HNO ₃ Y = NaOH Z = Na ₃ S ₂ O ₃	defines HNOs O,		Type SW = Surface water SWC = Creek SWP = Pond SWD = Dam SWL = Puddle GW = Groundwater GWA = Artestan GWS = Sub-artestan	Type SW = Surface water SWC = Creek SWD = Pond SWD = Dam SWL = Puddle GW = Groundwater GWA = Artesian GWS = Sub-artesian		Sampling device B = Bailer P = Prison S = Spring SP = Submersib GD = Gas drive GL = Gas ## SL = Suction lift PD = Positive di G = Grab	Sampling device B = Bailer P = Piston S = Spring SP = Submersible pump GD = Gas drive GL = Gas aft SL = Suction lift FD = Positive displacement G = Grab	p	Sampling P1 = Polyr G = Ambe	Sampling Containor PI = Polyethylene G = Amber glass	F F F F F F F F F F F F F F F F F F F	Field Parameters Field parameters with be measured ex-situ in it from EPA Victoria Publication 669) ±10% Du When >1ppm (no criteria for<1ppm) ±10% Turbidity ±20% EC ±20% EX ±10m V ORP ±10m V ORP manufacturer's specifications	Field Parameters Field parameters will be measured ex-silu in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669) \$10% DO when >1ppm (no criteria for<1ppm) \$25% EVA Turbidity \$25% EVA Turb





Job No: 2,0074	Date: (9 /4/11	1/4/11		Sample	d By:	Sampled By: KK, W	1	Client	Client: Ghy of	Port Phillip		W38
Type + Container Depth + Additive	Time	Water Level (m)	Stickup (m)	Volume Purged (L)	Temp	ЬН	pe mV	Dissolved Oxygen (ppm)	WSear.	Odour	Colour	Comments
		8-99										
		01.1		8	18.3	7.30	15-	2.99	5.28	strong	denk ziny,	Support waging to accord
		01.6		7.7	-	1.07	-50	64.1	5.35	1	1	Joseph John John John John John John John Joh
		20.6		S	9.81	7.02	64-	2.65	2.44	"		2 cycle whim who duopping
		9.15		4	F. 4	10-4	-4.8	2.52	5.46	£	14	Pacined pump.
		9.10		4.5	18.8	7.01	-46	2.57	8.49		cleaning shifty	1 com Pauxed agai
	10:25 7.08	3.08		4.7	18.8	46.9	th-	2.79	5.81	Ŋ	mshty gray	Sampled.
Additives W = no additives X = conc. HWO ₃ Y = NsOH Z = Na ₂ S ₃ O ₃		Type SW = Surface water SW = Surface water SWC = Creek SWD = Dand SWD = Dam SWL = Puddle GW = Groundwater CW = Groundwater	Type SW = Surface water SWC = Creek SWP = Pond SWP = Dond GW = Qeunthwater GW = Recurbinater		Sampting device B = Bailer P = Piston S = Spring SP = Submersib GD = Gas drive GL = Gas iff SL = Suction IIII	Sampling device B = Bailer P = Piston S = Spring SP = Submersible pump GD = Gas drive GL = Gas filt SL = Suction Mt	9	Sampling P! = Poly G = Ambq	Sampling Container PI = Polyethylene G = Amber glass	正在完計計劃計	Field Parameters Field Parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (at from EPA Victoria Publication 669) ±10% DO when >1ppm (no criteria far<1ppm) ±3% EC 10.56 pH ±10mV ORP	

Field Parameters
Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669)

±10% Do when >1ppm (no criteria for<1ppm)

±10% Do when >1ppm (no criteria for<1ppm)

±10% Turbidity

±3% EC

±10% Do when >1ppm (no criteria for<1ppm)

±10m (no criteria for<1ppm)

Sampling Container PI = Polyethylene G = Amber glass

Sampling device

B = Bailer
P = Piston
S = Spring
SP = Suthmersible pump
GD = Gas drive
GL = Gas lift
SL = Suction lift
PD = Positive displacement
G = Grab

Type
SW = Surface water
SWC = Creek
SWP = Pond
SWD = Dam
SWL = Puddle
GW = Groundwater
GWA = Artesian
GWS = Sub-artesian

Additives W = no additives X = conc. HND₃ Y = NaOH Z = Na₃S₂O₃

Key





EARTH SCIENCES
THE KNOW AND THE HOW

	the	Job No: 2/0074 Date: P/4	1/1/6		Sampled By: KK	ed By:	女		Client:	8 mg	Client: Euly of Nort Mully	holly Site: GN/2	MIS
0	Container + Additive	Time	Water Level (m)	Stickup (m)	Volume Purged (L)	Тетр	Hd	pe mV	Dissolved Oxygen (ppm)	uScm.1	Odour	Colour	Comments
		3:10	7.83										
			7.86		4	7.02	£4.9	25	3.88	618	x4844	Sugarly twoord	3 cpm
			4.七		X	19.61	6.42	19	3.68	tbt		mad cloudy	
			799		3	4.4	6.40	19	3.74	793	1	5	
			41.8		4	19.4	6.48	73	3.00	593	33	\$	Ledweed to 2 gay
		3:05	8.21		2	A.C	A.6 6.51	+3	2.97 590	290	ź	24	rouned may to recover
		5:27	3:27 8.15										
		3:31	3:31 8.17		9	202 6.51	15.9	90	3.59 598	848	1	becoming	we still & slightly, 2 dom
			8.30		7.5	19.3	7.5 19.3 6.53	93	3.86 653	653	5	5	000
·		3:50	3:50 8.31		8.5	19.1	19.1 6.72	88	3.82	009	- 2	ş	
		3:55			9.6	1.61	19.1 6.64	93	3.99 586	286	3	s	
			8.35		9.5	1.6	F4.9 1.19	46	3.88	£85	2		sampling commenced
											-		





Port Willy Site: 9W/6	Comments		ey Hope	ey reduced to 3cpM	ubd We pluckes by during	reduced to Degry. W. V	Styped to allow recharge	,							Floid Parameters Floid parameters Floid parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669) ±10% D0 when >1ppm (no criteria for<1ppm) ±10% Luthidity ±2% EC ±10% Luthidity ±10m VORP ±10m VORP
4 Muly S	Colour		tubild, gi	this grand	Slightly for	00,0		to 10mins. The Willsmyle row							Fleid Parameters Fleid parameters will be m from EPA Victoria Publical ±10% Do when >1ppm (n ±10% Turbidity ±2% EC ±2% EC ±2.05 pH ±10mV Opp
ef Por	Odour		Mone	3.5	0	3		Roy Wills							E E S 2 4 4 5 5 4 4 5
aky	EC uScm.1		246	246	244	777	245	B. 51	243						Sampling Container Pl = Polyethylene G = Amber glass
Client: (Dissolved Oxygen (ppm)		2:17	4.77	4.56 244	4.33	5.40	har 10m	4.93			Ì			Sampling PI = Polye G = Ambe
	Vm aq		501	104	401	to	106	Left	101						Q1 poem
2	Hd		6.84	6.87	18.6 6.88	18.6 6.89	98.9	not rising.	68.9						Sampling device B = Bailer P = Priston S = Spring SP = Submersible pump GD = Gas drive GL = Gas III SL = Sutton device of the SP = Supplied of the SP = SP
ed By:	Тетр		18.7	18.7	18.6	18.6	18.6	not	18.5						Sampli B = Ba B = Ba S = Sp S = Sp Sp S = Sp S = Sp
sampled by:	Volume Purged (L)		1.5	2.0	3.5	4	6	M	6.2						
510	Stickup (m)														ce water d d file file file sian
11/1/0	Water Level (m)	4.85	5.0	5.14	5,20	5:36	5.65	5.71	5.42				ю.		Type SW = Surface water SWC = Creck SWP = Pond SWD = Dem SWL = Puddle GW = Groundwater GW = Arfesten GWS = Sub-arrestan
Date: 10/4//	Time					3:42pm 5:36	4:54 5.65	H:10 5.71		10-2					
	Container + Additive						1								Additives W = no additives X = conc. HNO ₃ Y = NaOH Z = Na ₂ S ₂ O ₃
JOD NO: 20074	Type + Depth														Additives W = no ad X = conc. 1 Y = NaOH Z = Na,S,S
Job A	Sample														Key



4	/									adapted
11/3	Comments		49m	1					sayled. stable	Field Parameters Field Parameters Field parameters Field parameters Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted ±10% DO when >1ppm (no criteria for<1ppm) ±10% Low
city of Port Phylly SITE. 70013	Colour		Veery trustend gifter	n n	N 35	110	3			Field Parameters Field Parameters Field parameters will be measured ex-si from EPA Victoria Publication 669) a 10% Turbidity a 25% EC a 20.5 pH Tennology Mile collibrated every three
f Port	Odour		nova	3	. By	*)	7.7	22	3	Filed From # 100 # 200 # 200 Prom # 200 #
	EQ uScm.1		5#5	545	543	543	244	545	540	Sampling Container P1 = Putyeltylene G = Amber glass
Clein	Dissolved Oxygen (ppm)		1).9	6.19	5.95 543	5.66	5.41	5-42 542	5.07 S#O	Sampling PI = Puye G = Amber
	ye mV		511	111	115	611	123	132	134	d Juneri
7	Hd		6.25	6-33	19.4 6.28				97.9	Sampling device B = Balter B = Psiton S = Spring S = Submersible pump GD = Gas drive GL = Gas fift FL = South H FL = South
an Dy.	Temp		1.5 19.5 6.25	19.4	19.4	19.4	19.3 6.22	19.3 6.22	19.3	Sampling device B = Bailer P = Phston S = Spring SP = Submestible GD = Gas drive GL = Gas lift FL = Sociotion in
campied by.	Volume Purged (L)		1.5	2.5	4	5	+	6	19	
	Stickup (m)									ce water ek, d d d fine fide ndwater ndwater asian
0116	Water Level (m)	7.60	7.60	7.74	7.76	±±±	pt.79			Type SW = Surface water SW = Surface water SWC = Creek SWP = Pond SWN = Dand SWN = Sundine GWN = Groundwater GWN = Groundwater
Date. Jul 1	Time	1:36	1:46				2:08		4: 17	
	Container * Additive									defeves Anos
JODINO. KIDDY	Type + Depth				13.1 F.2					Additives We no addisves X = conc. HNOs Y = NasSpOs Z = NasSpOs
30D IV	Sample									Key



Site: 9w/4	Colour		2016 4 4 com	a Me the dusing a period beent	0	***	ming slightly lbs	(4)		3	Sampled. stable					Fleid parameters from the measured excitu in in-line flow cells with the following stabilisation criteria (adapted from EPA Victoria Publication 669). ±10% DO when >1ppm (no criteria for<1ppm). ±10% Tubidity. ±10% EC. ±0.05 pH
helley			nays	57	3	*	See to		r					-		Field Parameters v Field parameters v from EPA Victoria ±10% Do when >> ±10% Turbidity ±3% EC ±0.05 pH
Client: Chy of Post Mully	mopo,		non	3	1)	3	z.		3	1						
ahy	EC uScm ⁻¹		795	848	549	237	645	521	345	Sts	345					Sampling Container Pl = Polyethylene G = Amber glass
Client:	Dissolved Oxygen (ppm)		3.59	2.80	2.20	184	1.86	1.93	2.01	2.01	6.49					Sampling Pl = Poly G = Ambr
	pe mV		121	18	7-1	53	45	43	42	42	42					Ġ _E
KR	Hd		6.33	6.56	6.55	95.9	6.61	M.4 6.60	6.63	6.63	6.62					Sampling device B = Bajler P = Piston S = Spring SP = Submersible pump GD = Gas drive GL = Gas drive GL = Gas drive
sampled by:	СС		18.5	9.0	19.2	19.3		P. 4	4.61	19.4	19.4 6.62					Sampling device B = Bailer P = Piston S = Soring SP = Submersibl GD = Gas drive GL = Gas drive GL = Gas drive
Sample	Volume Purged (L)		4	8	3.5	5	و.	4	8	600	10					
-	Stickup (m))							(a. 4 a. a			, , ,				ace water nd nd m m ndwater
1	Water Level (m)	7.18	725	7.20	7-33	7.32	7.33	7.33	Tu	7. m	nt			-		Type SW = Surface water SWC = Creek SWP = Pond SWD = Dond SWL = Puddle GW = Coundwater CWA = Artesian
Date: 20	Time		12:02 7.25		12:13 7-22	13.20 7.32				W.t ends	12:40 7 12					
_	Container + Additive															ss addisves H H 5,03
JOD NO. 7 100 TH	Type + Depth															Additives W = conc HNO ₃ Y = conc HNO ₃ Y = NaOH Z = Na ₂ S ₂ O ₃
JOD	Sample															Key





* Additive		4	. Canadana	-	1	-	200		I come		
	Water Level (m)	Stickup (m)	Volume Purged (L)	ССС	Hd	be mV	Oxygen (ppm)	uSem-1	Odour	Colour	Comments
7: Salam 7.21	7.21									tubid yellow	
	15:1		1.5	18.1	4.86 257		8.08	391	slight.	the hild 411 shake-	2 ym
	7.34		8	18.4	5.13 266		2,5	403	shint-	to milley	
8:12	7.43		2.5	18.5	5.59 270	0	4.97	405	5	3	pumper stopped to allow for
8:29	7.33										Commence of 8: 44am
8:44	7.29										
	7-37		3.5	184	5.59 262		4.97	406	4	11.	We dropping - stow rectioning
	04.7		4	18.6 3	18.6 5-60	492	4.30	198	14	s	
10:6	7.46		5	18.6	18.65.62 268		4.53	471	5	r	start sampling - slow
											1 Cheeney
/	1										
100		1									
	1										
Additives W = no additives X = conc. HNO ₃ Y = NaOH Z = Na.S ₃ O ₃	Type SW is Surface water SWC = Creek SWD = Pond SWD = Dam SWL = Puddle GW = Croundwater GW = Croundwater GW = Artesian GWS = Sub-gipesian	oce water ock, and m m water mawater esian		Sampling device B = Bailer P = Piston P = Spring SP = Submersible GD = Gas drive GL = Gas lift SL = Suction lift PD = Positive disp	Sampling device B = Bailer P = Phiston S = Spring SP = Submersible pump GD = Gas drive GD = Gas drive GD = Gas lift SL = Suction lift SL = Suction lift PD = Positive displacement	d- tent	Sampling Container P1 = Polyethylene G = Amber glass	Container	Fig. 1769 Fig. 1	Field Parameters Field parameters will be measured ex-situ in infrom EPA Victoria Publication 669) ±10% DO when >1ppm (no criteria for<1ppm) ±3% EC ±10% DO When >1ppm (no criteria for<1ppm) ±3% EC ±10% ONP ±10mV ORP The meter will be calibrated every three boxes	Field Parameters Field parameters will be measured ex-situ in in-line flow cells with the following stabilisation criteria (adapted from EA Victoria Publication 669) ±10% DO when >1ppm (no criteria for-1ppm) ±20% EV when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm) ±20% EV = ±100 when >1ppm (no criteria for-1ppm)



APPENDIX J PIPER PLOT CHART

