coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

9 February 2009

Level 9, 1 Chifley Square
Sydney NSW 2000

Attention: Denis Ghersinich

Dear Denis

RE: Valad Commercial Development, 630 - 726 Princes Highway and Areas 1A & 1B Tempe Lands, Tempe - Gas Analysis

1 INTRODUCTION

Valad Property Group (Valad) is proposing to develop large retail complex on the Site. The development will have a large two-storey building with associated car parking and transport infrastructure. According to the current architectural plans, the building structure is proposed to cover areas of the parcel of land known as Ateco (634 - 726 Princess Highway) and parts of the former Tempe Lands site. The car park will predominantly cover the parcels know as Kennards Storage site (632 Princess Highway), KAS Auto (630 Princess Highway) and Tempe Lands. Tempe Lands was a part of a former landfill, which was rehabilitated recently by the former owners, Marrickville Council by placing a "cap" constructed of virgin excavated natural material (VENM).

The investigations undertaken on the Site have shown that landfill gases are being generated within the Tempe Lands portion of the Site and some landfill gases are potentially migrating across the boundary to adjoining properties including three parcels of land that make up 630-726 Princess Highway, Tempe.

As part of the development being proposed by Valad, measures will be put in place to reduce opportunities for landfill gas to ingress the building. Furthermore as part of the landfill licence surrender requirements, measures will be put in place by Marrickville Council to reduce the potential for landfill gas to migrate from Tempe Lands to the adjoining properties via the subsurface.

These measures are discussed in the following Coffey documents:

- Remediation Action Plan, Valad Tempe Commercial development at 630-726 Princess Highway and Areas 1A & 1B Tempe Lands, Tempe (*ref: ENVILCOV00315AH-R03d, 3 February 2009)*; and

- Addendum 1: Tempe Lands Remediation: Revised Feasibility Study of Landfill Gas Migration Mitigation Measures, Chain Linkage -25.00 To 254,54 (final draft) *(ref: ENVILCOV00315AF-R01a, 11 November 2009).*

2 PURPOSE AND SCOPE OF WORKS

The purpose of the works was to assess potential chemical contaminants present in the landfill gas at Tempe landfill that may present a potential risk to human health as a result of venting from a proposed landfill gas passive venting system. The scope of works involved:

- Collection of gas samples from two existing wells in the Tempe Landfill and analysis for a broad range of contaminants;
- Assessment of detected contaminants against published air quality guideline levels to assess contaminants that may present a potential human health risk;
- For compounds exceeding published guidelines, undertake simple modelling to assess air concentrations of those contaminants in the vicinity of the proposed gas venting system;
- Reporting of the results of the sampling and modelling.

3 SAMPLING METHODOLOGY

Gas monitoring from two existing landfill gas wells (GW9 and GW11) was undertaken by Leeder Consulting on 16 January 2009. The locations of the wells sampled are presented on Figure 3. The analytical schedule for sampling comprised permanent gases (including oxygen, carbon dioxide and methane), sulphur compounds (including hydrogen sulfide and sulphur dioxide), volatile organic compounds (including benzene, toluene, ethylbenzene, xylene (BTEX) and chlorinated organic compounds), and semivolatile organic compounds (including polynuclear aromatic hydrocarbons). The sampling methodology comprised:

Permanent Gases. Samples were collected from each well into Tedlar Gas Bags using a "Lung Box" (vacuum box) sampler. This method ensures the gas is sampled directly into the gas bag and reduces the possibility of the sample being contaminated by the sampling equipment. The samples were returned to Leeder Consulting's Melbourne laboratory and analysed by *General Gases Method MA-1105 (based on ASTM D1945-96)* using a Gas Chromatograph with a carrier gas, packed columns, TCD and FID detectors.

Sulphur Compounds. Samples were collected form each well into Teflon Gas Bags using a "Lung Box" (vacuum box) sampler. This ensures the gas is sampled directly into the gas bag and reduces the possibility of the sample being contaminated by the sampling equipment. The samples were returned to Leeder Consulting's Melbourne laboratory and analysed by Sulphur *Gas Method MA-1113*.

Volatile Organic Compounds (VOCs). Samples were collected from each well using active sampling onto "Airtoxics Sorbent Tubes". Samples were collected in duplicate as distributed volume pairs for analysis.

Semivolatile Organic Compounds (SVOCs). Samples were collected from each well on an XAD-2 resin tube directly from the source using active sampling. The samples were analysed for PAHs and scanned for SVOCs using *USEPA Method 8270C*.

Following collection, the samples were transported under Chain of Custody conditions to Leeder Consulting (a NATA accredited laboratory) for analysis.

4 ADOPTED AIR INVESTIGATION LEVELS

Data on Australian air quality guidelines are limited. Interim National Indoor Air Quality Goals recommended by National Health & Medical Research Council (NHMRC) in 1996 were rescinded on 19 March 2002 and these were reported in the Environment Australia State of Knowledge Report (2001). The former NHMRC Goal for Total VOCs was 500 µg/m3 as an hourly average with no single compound exceeding 50% of the total. Ambient Air Investigation Levels for Air Toxics (which include organics) have been established under the National Environment Protection Measure for Air Toxics (2004), however, these are preliminary investigation levels for five substances – benzene, polycyclic aromatic hydrocarbons, formaldehyde, toluene and xylenes. The objective of the NEPM is to focus on the collection of population exposure data in order to undertake a quantitative risk assessment and subsequently develop appropriate guidelines. The Air Toxics Investigation levels, however, have been based on a review of the health literature and health endpoints.

There are a number of regulatory agencies that have established a variety of guidelines, Reference Exposure Levels, Maximum Permissible Risk levels or ILs, based on a combination of acute or chronic endpoints. The former are used for short-term averaged exposure evaluations (e.g. 30 minute or 1 hour time weighted averages) and the latter for long-term averaged exposure evaluations (e.g. annual averages). In Australia annual averages are averaged 24 hour monitoring results over a year based on a specified monitoring frequency over the year. Regulatory guidelines for detected substances that have been adopted in this monitoring event are presented in **Table 1**. Australian guidelines (NEPM Air Toxics Investigation Levels) have been adopted where available as these are based on health endpoints and provide the Australian perspective. If no Australian guidelines are available the most recent regulatory guidelines from overseas jurisdictions have been considered. These may include those over different time-averaged periods.

TABLE 1 ADOPTED AIR INVESTIGATION LEVELS

Substance	Short-term Human Health			Long-term Human Health		
	Duration (hours)	Value ($\mu g/m^3$)	Reference	Duration	Value ($\mu g/m^3$)	Reference
Oxygen	NA	NA	NA	NA	NA	NA
Nitrogen	NA	NA	NA	NA	NA	NA
Methane	NA	NA	NA	NA	NA	NA
Ethane	NA	NA	NA	NA	NA	NA
Ethylene	NA	NA	NA	NA	NA	NA
cis-1,2-dichloroethene	24	105	Ontario MOE, 2008	NA	NA	NA
trans-1,2-dichloroethene	24	105	Ontario MOE, 2008	NA	NA	NA
benzene	6	1300	OEHHA, 1999	Annual	9.6	NEPC, 2004
				Annual	1.7	WHO, 2000
sec-butylbenzene	NA	NA	NA	NA	NA	NA
dichlorodifluoromethane (freon12)	24	500000	Ontario MOE, 2008	NA	NA	NA
ethyl benzene	NA	NA	NA	Annual	2,000	OEHHA, 2005
				Annual	22,000	WHO, 2000
isopropylbenzene	24	400	Ontario MOE, 2008	NA	NA	NA
4-isopropyltoluene	NA	NA	NA	NA	NA	NA
propylbenzene	NA	NA	NA	NA	NA	NA
trichloroethene	24	12	Ontario MOE, 2008	Annual (1 in 100,000)	23	WHO, 2000
toluene	24	3780	NEPC, 2004	Annual	378	NEPC, 2004
	0.5	37,000	OEHHA, 1999	Weekly	260	WHO, 2000
		1,000 (odour)	WHO, 2000	Annual	300	OEHHA, 2005
1,2,4-trimethylbenzene	24	220	Ontario MOE, 2008	NA	NA	NA
1,3,5-trimethylbenzene	24	220	Ontario MOE, 2008	NA	NA	NA
xylenes	24	1088	NEPC, 2004	Annual	870	NEPC, 2004
		730	Ontario MOE, 2008			
		22,000	OEHHA, 1999			

Notes:

NA = not available

5 LABORATORY ANALYSIS

5.1 Gas Monitoring Results

The compounds detected through gas monitoring from locations MW9 and MW11 are presented in Table 2. The laboratory analysis certificate is attached.

Data from the monitoring has identified a limited number of VOCs present above the LOR for the respective methods used. Comparison of the detected VOCs with current available Australian and overseas regulatory guidelines based on short-term and long-term exposures (Table 1) was undertaken. Note that Australian guidelines are used preferentially where available. Table 2 shows exceedance of the investigation level for benzene at MW9 and cis-1,2-dichloroethene, benzene, and trichloroethene at MW11. Based the exceedances of air quality guidelines, benzene, cis-1,2-dichloroethene and trichloroethene have been identified as contaminants of concern which require further consideration.

TABLE 2 SUMMARY OF RESULTS

Substance	PQL	Landfill gas concentration (µg/m^3)		Comments
		MW9	MW11	
Oxygen	0.1%	0.6%	0.5%	No applicable guidelines available
Nitrogen	0.1%	41%	65%	
Methane	0.01%	51%	26%	
Ethane	0.01%	7.4%	7.6%	
Ethylene	0.002%	0.5%	0.8%	
cis-1,2-dichloroethene	10	ND	420	Exceedance of short-term value at MW11
trans-1,2-dichloroethene	10	ND	46	
benzene	10	87	58	Exceedance of long-term value at MW9 and MW11
	10			
sec-butylbenzene	10	25	ND	No applicable guidelines available
dichlorodifluoromethane (freon12)	10	1300	430	
ethyl benzene	10	14	82	
isopropylbenzene	10	45	ND	
4-isopropyltoluene	10	36	ND	No applicable guidelines available
propylbenzene	10	14	ND	No applicable guidelines available
trichloroethene	10	ND	26	
toluene	10	37	76	
1,2,4-trimethylbenzene	10	20	nd	
1,3,5-trimethylbenzene	10	12	nd	
xylenes	10	72	33	

Notes:

Shaded values exceed adopted air guideline values. Pink shading indicates an exceedance of the long-term guideline. Yellow shading indicates an exceedance of the short-term guideline.

5.2 Quality Assurance /Quality Control

Trip and method blanks reported results below the respective species-specific PQLs. The spiked sample and duplicate spiked sample were assessed for recovery with percentage recovery ranges of 75-107% based on detected VOCs. These comply with NATA requirements of 60-130%.

Field duplicate samples were assessed for relative percent difference (RPD). RPDs ranged from 0% to 33%, with higher RPDs (>30%) occurring for samples within 5 times the limit of reporting. On this basis, the RPDs for field duplicate samples are considered acceptable.

Air monitoring data are subsequently considered to be of an acceptable quality for evaluation purposes.

6 DISCUSSION OF RESULTS

6.1 Monitoring well gas sampling

Monitoring of wells MW9 and MW11 at the Tempe landfill has identified contaminants of concern comprising benzene, cis-1,2-dichloroethene and trichloroethene. The monitoring was undertaken for the purposes of assessing chemical contaminants present in the landfill gas that may present a potential risk to human health as a result of venting of the gases from a proposed landfill gas collection system. It is important to note that the concentrations of VOCs detected in wells MW9 and MW11 represent source concentrations, which will be significantly reduced on venting through mixing and dilution processes.

6.2 Modelling of contaminant concentrations resulting from vent emissions

Due to several contaminants exceeding the published guidelines, further assessment of the air concentrations of these contaminants in the vicinity of the proposed vent system was undertaken.

A box model was used to assess air concentrations in the vicinity of the proposed landfill gas vents. The model assumes gas emission from the vents is evenly dispersed in a given volume of air and this gas is diluted through movement of air (wind) through the box. The gas concentration in the box is therefore related to the dimensions of the box, the flux of gas and contaminants into the box and air flow (or wind speed) through the box. The gas concentration for a particular contaminant in the box after mixing is given by the formula:

$$AirConcentration(C)\mu g/m^3 = \frac{S \times E}{v \times W \times H}$$

where, C = Modelled air concentration of a particular contaminant, in the vicinity of the gas vents

S = contaminant source concentration ($\mu g/m^3$)

E = gas emission rate (m^3/s)

v = wind velocity (m/s)

W = width of box (m)

H = height of box (m)

Parameters used in the box model are discussed below.

Contaminant Source Concentration

Contaminant source concentrations were provided through the sampling presented in this report. Contaminants of concern were those exceeding the adopted air guideline criteria. For each contaminant of concern, the maximum concentration measured at either of the two wells was adopted for the modelling.

Dimensions of box model

The dimensions of the box have been defined by the proposed gas venting system. This proposed system is approximately 760m long, with vents 6m in height (the model assumes mixing over the entire 6m height). It is noted that the width of the vent system will be less than 0.5m. However, as a conservative assumption, the width of the box has been assumed to be 10m to allow for greater mixing time in the box. Therefore dimensions of the box adopted are 760m in length, 6m in height and 10m in width.

Landfill Gas Emission Rate

Landfill gas emission rate was assessed through modelling using the USEPA LandGEM model. This model incorporated data from the historical landfill activities to calculate a total gas generation rate from the landfill. Based on the LandGEM model the calculated landfill total gas generation rate in 2009 is $475m^3$/year. It is noted that the total gas generation rate is calculated to fall by approximately 4% per year thereafter.

Measurements of gas generation from 6 landfill monitoring wells by Coffey Environments in 2007 (Coffey, 2007) showed gas rates from the wells ranged from 0.1mL/min ($0.05m^3$/yr) to 4mL/min ($2m^3$/yr). Based on this data and considering the gas collection system will be located on a small portion of the landfill, it is considered unlikely that a gas emission rate from landfill gas venting system will be as high as calculated using LandGEM. However, as a conservative approach, it has been assumed that the emission rate of the gas from the venting system is equal to the LandGEM calculated total rate of gas generated by the entire landfill, or $475m^3$/year.

Wind Velocity

Data published by the Bureau of Meteorology for Sydney Airport weather station (id: 066037) between 1939 and 2008 show annual mean 9am wind speed of 14.1km/h (3.9m/s) and 3pm wind speed of 21.5km/h (6m/s). As a conservative assumption, a wind velocity of 0.5m/s has been adopted for the model which is well below the values published by the Bureau of Meteorology.

Modelled Air Concentration of Contaminants of Concern

Based on the above data and assumptions, air concentrations for each contaminant of concern in the vicinity of the gas vents has been calculated. Table 3 presents a summary of the modelled air concentrations.

TABLE 3 MODELLED AIR CONCENTRATIONS OF CONTAMINANTS

Contaminant of concern	Source Concentration ($\mu g/m^3$)	Calculated Air Concentration ($\mu g/m^3$)
benzene	87	$4.4x10^{-5}$
cis-1,2-dichloroethene	420	$2.1x10^{-4}$
trichloroethene	26	$1.3x10^{-5}$

6.3 Discussion of Modelled Contaminant Concentrations

As shown in Table 3, the modelled concentrations of contaminants of concern in air have significantly reduced from the source concentrations measured in the landfill monitoring wells. Comparison of the calculated contaminant air concentrations with adopted air guidelines shows the modelled concentrations are significantly below the respective guideline values. On this basis, the concentrations of the contaminants of concern identified in the landfill gas samples (source samples from monitoring wells) are considered unlikely to present a human health risk through passive venting of the landfill gas through the proposed venting system.

It is noted that the model adopted was a basic model which has a number of limitations, in particular the model does not account for the complexities of air movement and contaminant dispersion. Due to this, the estimated concentration values may be significantly different to what may occur. To account for the simplicity of the model, a number of conservative assumptions have been used to model the contaminant concentrations in air. These include using the maximum contaminant concentrations from the landfill source, adopting lower than average wind speed and a high gas emission rate (based on the assumption that all of the landfill gas produced by the landfill is passed through the vent system). Due to the nature of the model and the assumptions used, it is considered that the modelled concentrations are likely to be over estimates of concentrations that may occur.

7 LIMITATIONS

We draw your attention to the enclosed sheet entitled “Important Information about Your Coffey Environmental Report” which should be read in conjunction with the report.

It is important to recognise that the gas sampling undertaken is a “point-in-time” analysis of a dynamic time-dependent process and all results need to be considered from that perspective.

8 REFERENCES

Environment Australia (2001) State of Knowledge Report: Air Toxics and Indoor Air Quality in Australia. Environment Australia, Canberra.

National Environment Protection Council (2004). National Environment Protection Measure for Air Toxics (NEPM). National Environment Protection Council, Canberra.

OEHHA (2005) Part 1. Chronic Reference Levels. Office of Health Hazard Assessment. California Environment Protection Agency, California, USA.

Ontario Ministry of the Environment (2008) Ontario Air Standards. Standards Development Branch, Ontario Ministry of the Environment, Ontario, Canada.

WHO (2000) Air Quality Guidelines for Europe. Second edition. WHO Regional Publications, European Series, No 91. Copenhagen.

For and on behalf of Coffey Environments Pty Ltd

Damien Davidson
Associate

Sam Gunasekera
Principal

Attachments: Leeder Consulting laboratory analysis certificate
Figure 1 - Site location plan
Figure 2 - Proposed gas vent system
Figure 3 - Monitoring well location plan
Important Information about your Coffey Environmental Report

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Important information about your **Coffey** Environmental Report

Uncertainties as to what lies below the ground on potentially contaminated sites can lead to remediation costs blow outs, reduction in the value of the land and to delays in the redevelopment of land. These uncertainties are an inherent part of dealing with land contamination. The following notes have been prepared by Coffey to help you interpret and understand the limitations of your report.

Your report has been written for a specific purpose

Your report has been developed on the basis of a specific purpose as understood by Coffey and applies only to the site or area investigated. For example, the purpose of your report may be:

- To assess the environmental effects of an on-going operation.
- To provide due diligence on behalf of a property vendor.
- To provide due diligence on behalf of a property purchaser.
- To provide information related to redevelopment of the site due to a proposed change in use, for example, industrial use to a residential use.
- To assess the existing baseline environmental, and sometimes geological and hydrological conditions or constraints of a site prior to an activity which may alter the sites environmental, geological or hydrological condition.

For each purpose, a specific approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible, quantify risks that both recognised and unrecognised contamination pose to the proposed activity. Such risks may be both financial (for example, clean up costs or limitations to the site use) and physical (for example, potential health risks to users of the site or the general public).

Scope of Investigations

The work was conducted, and the report has been prepared, in response to specific instructions from the client to whom this report is addressed, within practical time and budgetary constraints, and in reliance on certain data and information made available to Coffey. The analyses, evaluations, opinions and conclusions presented in this report are based on those instructions, requirements, data or information, and they could change if such instructions etc. are in fact inaccurate or incomplete.

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man and may change with time. For example, groundwater levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of the subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Coffey to be advised how time may have impacted on the project and/or on the property.

Interpretation of factual data

Environmental site assessments identify actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from indirect field measurements and sometimes other reports on the site are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of Coffey through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other problems encountered on site.

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Important information about your **Coffey** Environmental Report

Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered with redevelopment or on-going use of the site. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. In particular, a due diligence report for a property vendor may not be suitable for satisfying the needs of a purchaser. Your report should not be applied for any purpose other than that originally specified at the time the report was issued.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Coffey to work with other professionals who are affected by the report. Have Coffey explain the report implications to professionals affected by them and then review plans and specifications produced to see how they have incorporated the report findings.

Data should not be separated from the report

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel), field testing and laboratory evaluation of field samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Contact Coffey for additional assistance

Coffey is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to land development and land use. It is common that not all approaches will be necessarily dealt with in your environmental site assessment report due to concepts proposed at that time. As a project progresses through planning and design toward construction and/or maintenance, speak with Coffey to develop alternative approaches to problems that may be of genuine benefit both in time and cost.

Responsibility

Environmental reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from Coffey to other parties but are included to identify where Coffey's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from Coffey closely and do not hesitate to ask any questions you may have.

72510 / 07-06

LEEDER CONSULTING

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4 - 5, 18 Redland Drive
Mitcham, Vic, 3132
Telephone: (03) 9874 1988
Fax: (03) 9874 1933

Chartered Chemists

23-Jan-2009

REPORT NUMBER: M090053

Site/Client Ref: Tempe

Coffey Environments
Level 1, 3 Rider Blvd
Rhodes
NSW 2138
Attention: Benedict Smith

CERTIFICATE OF ANALYSIS

SAMPLES:	Twenty-one samples were received for analysis
DATE RECEIVED:	**19-Jan-2009**
DATE COMMENCED:	**19-Jan-2009**
METHODS:	See Attached Results
RESULTS:	Please refer to attached pages for results.

Note: Results are based on samples as received at Leeder Consulting's laboratories

REPORTED BY:

Evan Jones
Manager

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.02 SVOCs

Sample units are expressed in mg/m³

Analyte Name	PQL	Leeder ID	2009000439	2009000440	2009000441	2009000442
		Client ID	GW9 Q585R	GW9 Field dup Q586R	GW11 Q588R	GW11 Q589R
bis (2-chloroisopropyl)ether	0.05		nd	nd	nd	nd
Acetamide	0.05		nd	nd	nd	nd
Acenaphthene	0.05		nd	nd	nd	nd
Acenaphthylene	0.05		nd	nd	nd	nd
2-Acetylaminofluorene	0.05		nd	nd	nd	nd
4-Aminobiphenyl	0.05		nd	nd	nd	nd
Aniline	0.05		nd	nd	nd	nd
Anthracene	0.05		nd	nd	nd	nd
Aramite	0.05		nd	nd	nd	nd
Benzo (a) anthracene	0.05		nd	nd	nd	nd
Benzidine	0.05		nd	nd	nd	nd
Benzo (a) pyrene	0.05		nd	nd	nd	nd
Benzo (b) fluoranthene	0.05		nd	nd	nd	nd
Benzo (ghi) perylene	0.05		nd	nd	nd	nd
Benzo (k) fluoranthene	0.05		nd	nd	nd	nd
Benzyl Alcohol	0.05		nd	nd	nd	nd
4-Bromophenyl phenyl ether	0.05		nd	nd	nd	nd
9H-Carbazole	0.05		nd	nd	nd	nd
4-chloroaniline	0.05		nd	nd	nd	nd
Chlorobenzilate	0.05		nd	nd	nd	nd
Bis (2-Chloroethoxy) methane	0.05		nd	nd	nd	nd
Bis (2-Chloroethyl) ether	0.05		nd	nd	nd	nd
4-Chloro-3-methylphenol	0.05		nd	nd	nd	nd
2-Chloronaphthalene	0.05		nd	nd	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.02 SVOCs

Sample units are expressed in mg/m³

	Leeder ID	2009000439	2009000440	2009000441	2009000442
	Client ID	GW9 Q585R	GW9 Field dup Q586R	GW11 Q588R	GW11 Q589R
Analyte Name	**PQL**				
2-Chlorophenol	0.05	nd	nd	nd	nd
4-Chlorophenyl phenyl ether	0.05	nd	nd	nd	nd
Chrysene	0.05	nd	nd	nd	nd
Diallate	0.05	nd	nd	nd	nd
Dibenz (ah) anthracene	0.05	nd	nd	nd	nd
Dibenz (aj) acridine	0.05	nd	nd	nd	nd
Dibenzofuran	0.05	nd	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd	nd	nd	nd
1,3-Dichlorobenzene	0.05	nd	nd	nd	nd
1,4-Dichlorobenzene	0.05	nd	nd	nd	nd
3,3´-Dichlorobenzidine	0.05	nd	nd	nd	nd
2,4-Dichlorophenol	0.05	nd	nd	nd	nd
2,6-Dichlorophenol	0.05	nd	nd	nd	nd
Dimethoate	0.05	nd	nd	nd	nd
p-Dimethylaminoazobenzene	0.05	nd	nd	nd	nd
7,12-Dimethylbenz(a)anthracene	0.05	nd	nd	nd	nd
3,3´-Dimethylbenzidine	0.05	nd	nd	nd	nd
a,a-Dimethylphenethylamine	0.05	nd	nd	nd	nd
2,4-Dimethylphenol	0.05	nd	nd	nd	nd
Dimethyl phosphonate	0.05	nd	nd	nd	nd
Dinoseb	0.05	nd	nd	nd	nd
1,3-Dinitrobenzene	0.05	nd	nd	nd	nd
4,6-Dinitro-2-methylphenol	0.05	nd	nd	nd	nd
2,4-Dinitrophenol	0.05	nd	nd	nd	nd
2,4-Dinitrotoluene	0.05	nd	nd	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.02 SVOCs

Sample units are expressed in mg/m³

	Leeder ID	2009000439	2009000440	2009000441	2009000442
	Client ID	GW9 Q585R	GW9 Field dup Q586R	GW11 Q588R	GW11 Q589R
Analyte Name	**PQL**				
2,6-Dinitrotoluene	0.05	nd	nd	nd	nd
Diphenylamine	0.05	nd	nd	nd	nd
Disulfoton	0.05	nd	nd	nd	nd
Dithione	0.05	nd	nd	nd	nd
Ethyl methansulfonate	0.05	nd	nd	nd	nd
Famphur	0.05	nd	nd	nd	nd
Fluoranthene	0.05	nd	nd	nd	nd
Fluorene	0.05	nd	nd	nd	nd
Hexachlorobenzene	0.05	nd	nd	nd	nd
Hexachlorobutadiene	0.05	nd	nd	nd	nd
Hexachlorocyclopentadiene	0.05	nd	nd	nd	nd
Hexachloroethane	0.05	nd	nd	nd	nd
Hexachlorophene	0.05	nd	nd	nd	nd
Hexachloropropene	0.05	nd	nd	nd	nd
Hydroquinone	0.05	nd	nd	nd	nd
Indeno (1,2,3-cd) pyrene	0.05	nd	nd	nd	nd
Isodrin	0.05	nd	nd	nd	nd
Isophorone	0.05	nd	nd	nd	nd
Isosafrole	0.05	nd	nd	nd	nd
Kepone	0.05	nd	nd	nd	nd
Methapyrilene	0.05	nd	nd	nd	nd
3-Methylcholanthrene	0.05	nd	nd	nd	nd
Methyl Methanesulfonate	0.05	nd	nd	nd	nd
1-Methylnaphthalene	0.05	nd	nd	nd	nd
2-Methylnaphthalene	0.05	nd	nd	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.02 SVOCs

Sample units are expressed in mg/m³

	Leeder ID	2009000439	2009000440	2009000441	2009000442
	Client ID	GW9 Q585R	GW9 Field dup Q586R	GW11 Q588R	GW11 Q589R
Analyte Name	**PQL**				
Methyl parathion	0.05	nd	nd	nd	nd
o-Cresol	0.05	nd	nd	nd	nd
m&p-Cresol	0.05	nd	nd	nd	nd
Naphthalene	0.05	nd	nd	nd	nd
1,4-Naphthoquinone	0.05	nd	nd	nd	nd
1-Naphthylamine	0.05	nd	nd	nd	nd
2-Naphthylamine	0.05	nd	nd	nd	nd
2-Nitroaniline	0.05	nd	nd	nd	nd
3-Nitroaniline	0.05	nd	nd	nd	nd
4-Nitroaniline	0.05	nd	nd	nd	nd
Nitrobenzene	0.05	nd	nd	nd	nd
2-Nitrophenol	0.05	nd	nd	nd	nd
4-Nitrophenol	0.05	nd	nd	nd	nd
4-Nitroquinoline-1-oxide	0.05	nd	nd	nd	nd
N-Nitrosodi-n-butylamine	0.05	nd	nd	nd	nd
N-Nitrosodiethylamine	0.05	nd	nd	nd	nd
N-Nitrosodimethylamine	0.05	nd	nd	nd	nd
N-Nitrosodiphenylamine	0.05	nd	nd	nd	nd
N-Nitrosodi-n-propylamine	0.05	nd	nd	nd	nd
N-Nitrosomethylethylamine	0.05	nd	nd	nd	nd
N-Nitrosomorpholine	0.05	nd	nd	nd	nd
N-Nitrosopiperidine	0.05	nd	nd	nd	nd
N-Nitrosopyrrolidine	0.05	nd	nd	nd	nd
5-Nitro-o-toluidine	0.05	nd	nd	nd	nd
Parathion	0.05	nd	nd	nd	nd

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.02 SVOCs

Sample units are expressed in mg/m³

	Leeder ID	2009000439	2009000440	2009000441	2009000442
	Client ID	GW9 Q585R	GW9 Field dup Q586R	GW11 Q588R	GW11 Q589R
Analyte Name	**PQL**				
Pentachlorobenzene	0.05	nd	nd	nd	nd
Pentachloroethane	0.05	nd	nd	nd	nd
Pentachloronitrobenzene	0.05	nd	nd	nd	nd
Pentachlorophenol	0.05	nd	nd	nd	nd
Phenacetin	0.05	nd	nd	nd	nd
Phenanthrene	0.05	nd	nd	nd	nd
Phenol	0.05	nd	nd	nd	nd
p-Phenylenediamine	0.05	nd	nd	nd	nd
Phorate	0.05	nd	nd	nd	nd
2-Picoline	0.05	nd	nd	nd	nd
Pronamide	0.05	nd	nd	nd	nd
Pyrene	0.05	nd	nd	nd	nd
Pyridine	0.05	nd	nd	nd	nd
Safrole	0.05	nd	nd	nd	nd
Sulfotepp	0.05	nd	nd	nd	nd
1,2,4,5-Tetrachlorobenzene	0.05	nd	nd	nd	nd
Tetrachlorocyclopropene	0.05	nd	nd	nd	nd
2,3,4,6-Tetrachlorophenol	0.05	nd	nd	nd	nd
Thionazin	0.05	nd	nd	nd	nd
o-Toluidine	0.05	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd	nd	nd	nd
1,3,5-Trichlorobenzene	0.05	nd	nd	nd	nd
2,4,5-Trichlorophenol	0.05	nd	nd	nd	nd
2,4,6-Trichlorophenol	0.05	nd	nd	nd	nd
O,O,O-Triethylphosphorothioate	0.05	nd	nd	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.02 SVOCs

Sample units are expressed in mg/m³

	Leeder ID	2009000439	2009000440	2009000441	2009000442
	Client ID	GW9 Q585R	GW9 Field dup Q586R	GW11 Q588R	GW11 Q589R
Analyte Name	**PQL**				
1,3,5-Trinitrobenzene	0.05	nd	nd	nd	nd
Aldrin	0.05	nd	nd	nd	nd
alpha-BHC	0.05	nd	nd	nd	nd
beta-BHC	0.05	nd	nd	nd	nd
delta-BHC	0.05	nd	nd	nd	nd
gamma-BHC	0.05	nd	nd	nd	nd
Chlordane	0.05	nd	nd	nd	nd
4,4-DDD	0.05	nd	nd	nd	nd
4,4-DDE	0.05	nd	nd	nd	nd
4,4-DDT	0.05	nd	nd	nd	nd
Dieldrin	0.05	nd	nd	nd	nd
Endosulfan 1	0.05	nd	nd	nd	nd
Endosulfan 2	0.05	nd	nd	nd	nd
Endosulfan Sulphate	0.05	nd	nd	nd	nd
Endrin	0.05	nd	nd	nd	nd
Endrin Aldehyde	0.05	nd	nd	nd	nd
Heptachlor	0.05	nd	nd	nd	nd
Heptachlor Epoxide	0.05	nd	nd	nd	nd
Methoxychlor	0.05	nd	nd	nd	nd
Chlorpyrifos	0.05	nd	nd	nd	nd
Fenitrothion	0.05	nd	nd	nd	nd
Malathion	0.05	nd	nd	nd	nd
Endrin ketone	0.05	nd	nd	nd	nd
Arochlor 1016	0.05	nd	nd	nd	nd
Arochlor 1221	0.05	nd	nd	nd	nd

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.02 SVOCs

Sample units are expressed in mg/m³

	Leeder ID	2009000439	2009000440	2009000441	2009000442
	Client ID	GW9 Q585R	GW9 Field dup Q586R	GW11 Q588R	GW11 Q589R
Analyte Name	**PQL**				
Arochlor 1232	0.05	nd	nd	nd	nd
Arochlor 1242	0.05	nd	nd	nd	nd
Arochlor 1248	0.05	nd	nd	nd	nd
Arochlor 1254	0.05	nd	nd	nd	nd
Arochlor 1260	0.05	nd	nd	nd	nd
Arochlor 1262	0.05	nd	nd	nd	nd
Arochlor 1268	0.05	nd	nd	nd	nd
Alachlor	0.05	nd	nd	nd	nd
Ametryn	0.05	nd	nd	nd	nd
Atraton	0.05	nd	nd	nd	nd
Atrazine	0.05	nd	nd	nd	nd
Bromacil	0.05	nd	nd	nd	nd
Butachlor	0.05	nd	nd	nd	nd
Butylate	0.05	nd	nd	nd	nd
Chlorpropham	0.05	nd	nd	nd	nd
Cyanazine	0.05	nd	nd	nd	nd
Cycloate	0.05	nd	nd	nd	nd
Dichlorvos	0.05	nd	nd	nd	nd
Diphenamid	0.05	nd	nd	nd	nd
EPTC	0.05	nd	nd	nd	nd
Ethoprop	0.05	nd	nd	nd	nd
Fenarimol	0.05	nd	nd	nd	nd
Fluridone	0.05	nd	nd	nd	nd
Hexazinone	0.05	nd	nd	nd	nd
Methyl Paraoxon	0.05	nd	nd	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.02 SVOCs

Sample units are expressed in mg/m³

Analyte Name	PQL	Leeder ID	2009000439	2009000440	2009000441	2009000442
		Client ID	GW9 Q585R	GW9 Field dup Q586R	GW11 Q588R	GW11 Q589R
Metolachlor	0.05		nd	nd	nd	nd
Mevinphos	0.05		nd	nd	nd	nd
MGK-264,mixed isomers	0.05		nd	nd	nd	nd
Molinate	0.05		nd	nd	nd	nd
Napropamide	0.05		nd	nd	nd	nd
Norflurazon	0.05		nd	nd	nd	nd
Pebulate	0.05		nd	nd	nd	nd
Prometon	0.05		nd	nd	nd	nd
Prometryn	0.05		nd	nd	nd	nd
Propachlor	0.05		nd	nd	nd	nd
Propazine	0.05		nd	nd	nd	nd
Simetryn	0.05		nd	nd	nd	nd
Stirofos	0.05		nd	nd	nd	nd
Tebuthiuron	0.05		nd	nd	nd	nd
Terbacil	0.05		nd	nd	nd	nd
Terbutryn	0.05		nd	nd	nd	nd
Triadimefon	0.05		nd	nd	nd	nd
Tricyclazole	0.05		nd	nd	nd	nd
Trifluralin	0.05		nd	nd	nd	nd
Vernolate	0.05		nd	nd	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Sample units are expressed in µg total

	Leeder ID	2009000443	2009000444
	Client ID	Trip Blank Q591R	Method
Analyte Name	PQL		Blank
bis (2-chloroisopropyl)ether	1	nd	nd
Acetamide	1	nd	nd
Acenaphthene	1	nd	nd
Acenaphthylene	1	nd	nd
2-Acetylaminofluorene	1	nd	nd
4-Aminobiphenyl	1	nd	nd
Aniline	1	nd	nd
Anthracene	1	nd	nd
Aramite	1	nd	nd
Benzo (a) anthracene	1	nd	nd
Benzidine	1	nd	nd
Benzo (a) pyrene	1	nd	nd
Benzo (b) fluoranthene	1	nd	nd
Benzo (ghi) perylene	1	nd	nd
Benzo (k) fluoranthene	1	nd	nd
Benzyl Alcohol	1	nd	nd
4-Bromophenyl phenyl ether	1	nd	nd
9H-Carbazole	1	nd	nd
4-chloroaniline	1	nd	nd
Chlorobenzilate	1	nd	nd
Bis (2-Chloroethoxy) methane	1	nd	nd
Bis (2-Chloroethyl) ether	1	nd	nd
4-Chloro-3-methylphenol	1	nd	nd
2-Chloronaphthalene	1	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Sample units are expressed in µg total

	Leeder ID	2009000443	2009000444
	Client ID	Trip Blank Q591R	Method
Analyte Name	PQL		Blank
2-Chlorophenol	1	nd	nd
4-Chlorophenyl phenyl ether	1	nd	nd
Chrysene	1	nd	nd
Diallate	1	nd	nd
Dibenz (ah) anthracene	1	nd	nd
Dibenz (aj) acridine	1	nd	nd
Dibenzofuran	1	nd	nd
1,2-Dichlorobenzene	1	nd	nd
1,3-Dichlorobenzene	1	nd	nd
1,4-Dichlorobenzene	1	nd	nd
3,3´-Dichlorobenzidine	1	nd	nd
2,4-Dichlorophenol	1	nd	nd
2,6-Dichlorophenol	1	nd	nd
Dimethoate	1	nd	nd
p-Dimethylaminoazobenzene	1	nd	nd
7,12-Dimethylbenz(a)anthracene	1	nd	nd
3,3´-Dimethylbenzidine	1	nd	nd
a,a-Dimethylphenethylamine	1	nd	nd
2,4-Dimethylphenol	1	nd	nd
Dimethyl phosphonate	1	nd	nd
Dinoseb	1	nd	nd
1,3-Dinitrobenzene	1	nd	nd
4,6-Dinitro-2-methylphenol	1	nd	nd
2,4-Dinitrophenol	1	nd	nd
2,4-Dinitrotoluene	1	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Sample units are expressed in µg total

	Leeder ID	2009000443	2009000444
	Client ID	Trip Blank Q591R	Method
Analyte Name	PQL		Blank
2,6-Dinitrotoluene	1	nd	nd
Diphenylamine	1	nd	nd
Disulfoton	1	nd	nd
Dithione	1	nd	nd
Ethyl methansulfonate	1	nd	nd
Famphur	1	nd	nd
Fluoranthene	1	nd	nd
Fluorene	1	nd	nd
Hexachlorobenzene	1	nd	nd
Hexachlorobutadiene	1	nd	nd
Hexachlorocyclopentadiene	1	nd	nd
Hexachloroethane	1	nd	nd
Hexachlorophene	1	nd	nd
Hexachloropropene	1	nd	nd
Hydroquinone	1	nd	nd
Indeno (1,2,3-cd) pyrene	1	nd	nd
Isodrin	1	nd	nd
Isophorone	1	nd	nd
Isosafrole	1	nd	nd
Kepone	1	nd	nd
Methapyrilene	1	nd	nd
3-Methylcholanthrene	1	nd	nd
Methyl Methanesulfonate	1	nd	nd
1-Methylnaphthalene	1	nd	nd
2-Methylnaphthalene	1	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Sample units are expressed in µg total

	Leeder ID	2009000443	2009000444
	Client ID	Trip Blank Q591R	Method
Analyte Name	PQL		Blank
Methyl parathion	1	nd	nd
o-Cresol	1	nd	nd
m&p-Cresol	1	nd	nd
Naphthalene	1	nd	nd
1,4-Naphthoquinone	1	nd	nd
1-Naphthylamine	1	nd	nd
2-Naphthylamine	1	nd	nd
2-Nitroaniline	1	nd	nd
3-Nitroaniline	1	nd	nd
4-Nitroaniline	1	nd	nd
Nitrobenzene	1	nd	nd
2-Nitrophenol	1	nd	nd
4-Nitrophenol	1	nd	nd
4-Nitroquinoline-1-oxide	1	nd	nd
N-Nitrosodi-n-butylamine	1	nd	nd
N-Nitrosodiethylamine	1	nd	nd
N-Nitrosodimethylamine	1	nd	nd
N-Nitrosodiphenylamine	1	nd	nd
N-Nitrosodi-n-propylamine	1	nd	nd
N-Nitrosomethylethylamine	1	nd	nd
N-Nitrosomorpholine	1	nd	nd
N-Nitrosopiperidine	1	nd	nd
N-Nitrosopyrrolidine	1	nd	nd
5-Nitro-o-toluidine	1	nd	nd
Parathion	1	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Sample units are expressed in µg total

	Leeder ID	2009000443	2009000444
	Client ID	Trip Blank Q591R	Method
Analyte Name	PQL		Blank
Pentachlorobenzene	1	nd	nd
Pentachloroethane	1	nd	nd
Pentachloronitrobenzene	1	nd	nd
Pentachlorophenol	1	nd	nd
Phenacetin	1	nd	nd
Phenanthrene	1	nd	nd
Phenol	1	nd	nd
p-Phenylenediamine	1	nd	nd
Phorate	1	nd	nd
2-Picoline	1	nd	nd
Pronamide	1	nd	nd
Pyrene	1	nd	nd
Pyridine	1	nd	nd
Safrole	1	nd	nd
Sulfotepp	1	nd	nd
1,2,4,5-Tetrachlorobenzene	1	nd	nd
Tetrachlorocyclopropene	1	nd	nd
2,3,4,6-Tetrachlorophenol	1	nd	nd
Thionazin	1	nd	nd
o-Toluidine	1	nd	nd
1,2,4-Trichlorobenzene	1	nd	nd
1,3,5-Trichlorobenzene	1	nd	nd
2,4,5-Trichlorophenol	1	nd	nd
2,4,6-Trichlorophenol	1	nd	nd
O,O,O-Triethylphosphorothioate	1	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Sample units are expressed in µg total

	Leeder ID	2009000443	2009000444
	Client ID	Trip Blank Q591R	Method
Analyte Name	**PQL**		Blank
1,3,5-Trinitrobenzene	1	nd	nd
Aldrin	1	nd	nd
alpha-BHC	1	nd	nd
beta-BHC	1	nd	nd
delta-BHC	1	nd	nd
gamma-BHC	1	nd	nd
Chlordane	1	nd	nd
4,4-DDD	1	nd	nd
4,4-DDE	1	nd	nd
4,4-DDT	1	nd	nd
Dieldrin	1	nd	nd
Endosulfan 1	1	nd	nd
Endosulfan 2	1	nd	nd
Endosulfan Sulphate	1	nd	nd
Endrin	1	nd	nd
Endrin Aldehyde	1	nd	nd
Heptachlor	1	nd	nd
Heptachlor Epoxide	1	nd	nd
Methoxychlor	1	nd	nd
Chlorpyrifos	1	nd	nd
Fenitrothion	1	nd	nd
Malathion	1	nd	nd
Endrin ketone	1	nd	nd
Arochlor 1016	1	nd	nd
Arochlor 1221	1	nd	nd

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Sample units are expressed in µg total

	Leeder ID	2009000443	2009000444
	Client ID	Trip Blank Q591R	Method
Analyte Name	PQL		Blank
Arochlor 1232	1	nd	nd
Arochlor 1242	1	nd	nd
Arochlor 1248	1	nd	nd
Arochlor 1254	1	nd	nd
Arochlor 1260	1	nd	nd
Arochlor 1262	1	nd	nd
Arochlor 1268	1	nd	nd
Alachlor	1	nd	nd
Ametryn	1	nd	nd
Atraton	1	nd	nd
Atrazine	1	nd	nd
Bromacil	1	nd	nd
Butachlor	1	nd	nd
Butylate	1	nd	nd
Chlorpropham	1	nd	nd
Cyanazine	1	nd	nd
Cycloate	1	nd	nd
Dichlorvos	1	nd	nd
Diphenamid	1	nd	nd
EPTC	1	nd	nd
Ethoprop	1	nd	nd
Fenarimol	1	nd	nd
Fluridone	1	nd	nd
Hexazinone	1	nd	nd
Methyl Paraoxon	1	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Sample units are expressed in µg total

	Leeder ID	2009000443	2009000444
	Client ID	Trip Blank Q591R	Method
Analyte Name	**PQL**		Blank
Metolachlor	1	nd	nd
Mevinphos	1	nd	nd
MGK-264,mixed isomers	1	nd	nd
Molinate	1	nd	nd
Napropamide	1	nd	nd
Norflurazon	1	nd	nd
Pebulate	1	nd	nd
Prometon	1	nd	nd
Prometryn	1	nd	nd
Propachlor	1	nd	nd
Propazine	1	nd	nd
Simetryn	1	nd	nd
Stirofos	1	nd	nd
Tebuthiuron	1	nd	nd
Terbacil	1	nd	nd
Terbutryn	1	nd	nd
Triadimefon	1	nd	nd
Tricyclazole	1	nd	nd
Trifluralin	1	nd	nd
Vernolate	1	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: XAD2 Tube

Method: Surrogate Recovery

Sample units are expressed in %

	Leeder ID	2009000439	2009000440	2009000441	2009000442	2009000443	2009000444
	Client ID	GW9 Q585R	GW9 Field dup Q586R	GW11 Q588R	GW11 Q589R	Trip Blank Q591R	Method
Analyte Name	PQL						Blank
Fluorobiphenyl		90	83	82	88	88	91
Fluorophenol		83	79	86	89	89	98
Nitrobenzene-d5		83	80	78	83	84	83
Phenol-d6		81	81	84	88	88	90
p-Terphenyl-d14		91	84	84	88	89	91
2,4,6-Tribromophenol		89	83	83	91	60	69

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: ATD Tube

Method: TO-17.01 Volatile Organics (w/v)

Sample units are expressed in µg/m³

Analyte Name	PQL	Leeder ID: 2009000448	2009000449	2009000453
		Client ID: GW9 Mi101249	GW9 Y48356	GW11 Y44231
Benzene	10	67	87	58
Bromobenzene	10	nd	nd	nd
Bromochloromethane	10	nd	nd	nd
Bromodichloromethane	10	nd	nd	nd
n-Butylbenzene	10	nd	nd	nd
sec-Butylbenzene	10	21	25	nd
tert-Butylbenzene	10	nd	nd	nd
Carbon tetrachloride	10	nd	nd	nd
Chlorobenzene	10	nd	nd	nd
Chloroethane	10	nd	nd	nd
Chloromethane	10	nd	nd	nd
2-Chlorotoluene	10	nd	nd	nd
4-Chlorotoluene	10	nd	nd	nd
1,2-Dibromo-3-chloropropane	10	nd	nd	nd
Dibromochloromethane	10	nd	nd	nd
1,2-Dibromoethane	10	nd	nd	nd
Dibromomethane	10	nd	nd	nd
1,2-Dichlorobenzene	10	nd	nd	nd
1,3-Dichlorobenzene	10	nd	nd	nd
1,4-Dichlorobenzene	10	nd	nd	nd
Dichlorodifluoromethane	10	1300	1000	430
1,2-Dichloroethane	10	nd	nd	nd
1,1-Dichloroethane	10	nd	nd	nd
1,1-Dichloroethene	10	nd	nd	nd

(I) RESULTS

Report N°: M090053

Matrix: ATD Tube

Method: TO-17.01 Volatile Organics (w/v)

Sample units are expressed in µg/m³

	Leeder ID	2009000448	2009000449	2009000453
	Client ID	GW9 Mi101249	GW9 Y48356	GW11 Y44231
Analyte Name	**PQL**			
cis-1,2-Dichloroethene	10	nd	nd	420
trans-1,2-Dichloroethene	10	nd	nd	46
1,2-Dichloropropane	10	nd	nd	nd
1,3-Dichloropropane	10	nd	nd	nd
2,2-Dichloropropane	10	nd	nd	nd
1,1-Dichloropropene	10	nd	nd	nd
cis-1,3-Dichloropropene	10	nd	nd	nd
trans-1,3-Dichloropropene	10	nd	nd	nd
Ethylbenzene	10	10	14	82
Hexachlorobutadiene	10	nd	nd	nd
Isopropylbenzene	10	33	45	nd
4-Isopropyltoluene	10	36	36	nd
Naphthalene	10	nd	nd	nd
Propylbenzene	10	nd	14	nd
Styrene	10	nd	nd	nd
1,1,1,2-Tetrachloroethane	10	nd	nd	nd
1,1,2,2-Tetrachloroethane	10	nd	nd	nd
Tetrachloroethene	10	nd	nd	nd
Toluene	10	28	37	76
Tribromomethane	10	nd	nd	nd
1,2,3-Trichlorobenzene	10	nd	nd	nd
1,2,4-Trichlorobenzene	10	nd	nd	nd
1,1,1-Trichloroethane	10	nd	nd	nd
1,1,2-Trichloroethane	10	nd	nd	nd
Trichloroethene	10	nd	nd	26

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: ATD Tube

Method: TO-17.01 Volatile Organics (w/v)

Sample units are expressed in µg/m³

	Leeder ID	2009000448	2009000449	2009000453
	Client ID	GW9 Mi101249	GW9 Y48356	GW11 Y44231
Analyte Name	**PQL**			
Trichlorofluoromethane	10	nd	nd	nd
Trichloromethane	10	nd	nd	nd
1,2,3-Trichloropropane	10	nd	nd	nd
1,2,4-Trimethylbenzene	10	17	20	nd
1,3,5-Trimethylbenzene	10	11	12	nd
Vinyl chloride	10	nd	nd	nd
Xylenes	10	61	72	33

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: ATD Tube

Method: TO-17.02 Volatile Organics

Sample units are expressed in ng/tube

	Leeder ID	2009000455	2009000456	2009000457
	Client ID	Trip Blank Mi101128	Trip Blank Mi094133	Method
Analyte Name	**PQL**			Blank
Benzene	5	nd	nd	nd
Bromobenzene	5	nd	nd	nd
Bromochloromethane	5	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd
n-Butylbenzene	5	nd	nd	nd
sec-Butylbenzene	5	nd	nd	nd
tert-Butylbenzene	5	nd	nd	nd
Carbon tetrachloride	5	nd	nd	nd
Chlorobenzene	5	nd	nd	nd
Chloroethane	5	nd	nd	nd
Chloromethane	5	nd	nd	nd
2-Chlorotoluene	5	nd	nd	nd
4-Chlorotoluene	5	nd	nd	nd
1,2-Dibromo-3-chloropropane	5	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd
1,2-Dibromoethane	5	nd	nd	nd
Dibromomethane	5	nd	nd	nd
1,2-Dichlorobenzene	5	nd	nd	nd
1,3-Dichlorobenzene	5	nd	nd	nd
1,4-Dichlorobenzene	5	nd	nd	nd
Dichlorodifluoromethane	5	nd	nd	nd
1,2-Dichloroethane	5	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd
1,1-Dichloroethene	5	nd	nd	nd

LEEDER CONSULTING

(I) RESULTS

Report N°: M090053

Matrix: ATD Tube

Method: TO-17.02 Volatile Organics

Sample units are expressed in ng/tube

	Leeder ID	2009000455	2009000456	2009000457
	Client ID	Trip Blank Mi101128	Trip Blank Mi094133	Method
Analyte Name	**PQL**			Blank
cis-1,2-Dichloroethene	5	nd	nd	nd
trans-1,2-Dichloroethene	5	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd
1,3-Dichloropropane	5	nd	nd	nd
2,2-Dichloropropane	5	nd	nd	nd
1,1-Dichloropropene	5	nd	nd	nd
cis-1,3-Dichloropropene	5	nd	nd	nd
trans-1,3-Dichloropropene	5	nd	nd	nd
Ethylbenzene	5	nd	nd	nd
Hexachlorobutadiene	5	nd	nd	nd
Isopropylbenzene	5	nd	nd	nd
4-Isopropyltoluene	5	nd	nd	nd
Naphthalene	5	nd	nd	nd
Propylbenzene	5	nd	nd	nd
Styrene	5	nd	nd	nd
1,1,1,2-Tetrachloroethane	5	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd
Toluene	5	nd	nd	nd
Tribromomethane	5	nd	nd	nd
1,2,3-Trichlorobenzene	5	nd	nd	nd
1,2,4-Trichlorobenzene	5	nd	nd	nd
1,1,1-Trichloroethane	5	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd
Trichloroethene	5	nd	nd	nd

(I) RESULTS

Report N°: M090053

Matrix: ATD Tube

Method: TO-17.02 Volatile Organics

Sample units are expressed in ng/tube

	Leeder ID	2009000455	2009000456	2009000457
	Client ID	Trip Blank Mi101128	Trip Blank Mi094133	Method
Analyte Name	**PQL**			Blank
Trichlorofluoromethane	5	nd	nd	nd
Trichloromethane	5	nd	nd	nd
1,2,3-Trichloropropane	5	nd	nd	nd
1,2,4-Trimethylbenzene	5	nd	nd	nd
1,3,5-Trimethylbenzene	5	nd	nd	nd
Vinyl chloride	5	nd	nd	nd
Xylenes	5	nd	nd	nd

Matrix: Gas Bag

Method: MA-1113.AIR.01 Sulphur Gases

Sample units are expressed in ppm

	Leeder ID	2009000460	2009000461	2009000462	2009000463
	Client ID	GW9	GW9 Field dup	GW11	GW9
Analyte Name	**PQL**				Duplicate
Hydrogen Sulphide	0.1	nd	nd	nd	nd
Carbonyl Sulphide	0.1	nd	nd	nd	nd
Methyl Mercaptan	0.1	nd	nd	nd	nd
Ethyl Mercaptan	0.1	nd	nd	nd	nd
Dimethyl Sulfide	0.1	nd	nd	nd	nd
n-Propyl Mercaptan	0.1	nd	nd	nd	nd
Thiophene	0.1	nd	nd	nd	nd
n-Butyl Mercaptan	0.1	nd	nd	nd	nd
Tetrahydrothiophene	0.1	nd	nd	nd	nd

(I) RESULTS

Report N°: M090053

Matrix: Gas Bag

Method: MA-1113.AIR.01 Sulphur Gases

Sample units are expressed in ppm

	Leeder ID	2009000464
	Client ID	Method
Analyte Name	PQL	Blank
Hydrogen Sulphide	0.1	nd
Carbonyl Sulphide	0.1	nd
Methyl Mercaptan	0.1	nd
Ethyl Mercaptan	0.1	nd
Dimethyl Sulfide	0.1	nd
n-Propyl Mercaptan	0.1	nd
Thiophene	0.1	nd
n-Butyl Mercaptan	0.1	nd
Tetrahydrothiophene	0.1	nd

Matrix: Gas Bag

Method: MA-1105.AIR.01 General Gases

Sample units are expressed in % by Vol

	Leeder ID	2009000493	2009000495
	Client ID	GW9	GW11
Analyte Name	PQL		
Helium	0.001	nd	nd
Hydrogen	0.001	nd	nd
Oxygen	0.1	0.6	0.5
Nitrogen	0.1	41	65
Methane	0.01	51	26
Carbon Dioxide	0.01	nd	nd
Ethane	0.01	7.4	7.6
Argon	0.1	nd	nd
Carbon Monoxide	0.0005	nd	nd
Ethylene	0.002	0.50	0.80

(II) QUALITY CONTROL

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2009000445	2009000446
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Acenaphthene		90	88
4-Chloro-3-methylphenol		75	75

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2009000445	2009000446
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
2-Chlorophenol		80	87
1,4-Dichlorobenzene		86	88

(II) QUALITY CONTROL

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2009000445	2009000446
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Methyl parathion		65	60
N-Nitrosodi-n-propylamine		66	70

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2009000445	2009000446
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Phenol		86	86
Pyrene		80	80
1,2,4-Trichlorobenzene		92	92

(II) QUALITY CONTROL

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2009000445	2009000446
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Aldrin		107	102
gamma-BHC		102	104
4,4-DDT		84	86
Dieldrin		104	107
Endrin		66	68
Heptachlor		94	93
Chlorpyrifos		90	91

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2009000445	2009000446
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Dichlorvos		81	85

(II) QUALITY CONTROL

Report N°: M090053

Matrix: XAD2 Tube

Method: USEPA 8270C.AIR.01 SVOCs

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2009000445	2009000446
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Metolachlor		85	88

Matrix: XAD2 Tube

Method: Surrogate Recovery

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2009000445	2009000446
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Fluorobiphenyl		95	93
Fluorophenol		96	99
Nitrobenzene-d5		84	86
Phenol-d6		90	92
p-Terphenyl-d14		94	95
2,4,6-Tribromophenol		91	91

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(II) QUALITY CONTROL

Report N°: M090053

Matrix: ATD Tube

Method: TO-17.02 Volatile Organics

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2009000458	2009000459
	Client ID	Method	Method
Analyte Name	**PQL**	Spike	Spike Dup
Benzene		100	105
Bromodichloromethane		99	103
Carbon tetrachloride		90	96
Chlorobenzene		95	98
Dibromochloromethane		90	95
1,2-Dichlorobenzene		86	88
1,3-Dichlorobenzene		87	90
1,4-Dichlorobenzene		80	81
1,2-Dichloroethane		98	104
1,1-Dichloroethane		98	102
1,1-Dichloroethene		94	100

(II) QUALITY CONTROL

Report N°: M090053

Matrix: ATD Tube

Method: TO-17.02 Volatile Organics

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2009000458	2009000459
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
trans-1,2-Dichloroethene		92	95
1,2-Dichloropropane		101	105
cis-1,3-Dichloropropene		81	83
trans-1,3-Dichloropropene		75	80
Ethylbenzene		98	101
1,1,2,2-Tetrachloroethane		99	101
Tetrachloroethene		90	93
Toluene		96	100
Tribromomethane		81	85
1,1,1-Trichloroethane		95	98
1,1,2-Trichloroethane		102	107
Trichloroethene		90	99

Matrix: ATD Tube

Method: TO-17.02 Volatile Organics

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2009000458	2009000459
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Trichloromethane		103	107

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(II) QUALITY CONTROL

Report N°: M090053

Matrix: Gas Bag

Method: MA-1113.AIR.01 Sulphur Gases

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2009000465	2009000466
	Client ID	Method	Method
Analyte Name	**PQL**	Spike	Spike Dup
Hydrogen Sulphide		117	114

QUALIFIERS / NOTES FOR REPORTED RESULTS

PQL	Practical Quantitation Limit
is	Insufficient Sample to perform this analysis.
T	Tentative identification based on computer library search of mass spectra.
ND	Not Detected – The analyte was not detected above the reported PQL.
nr	Not Requested for analysis.
R	Rejected Result – results for this analysis failed QC checks.
SQ	Semi-Quantitative result – quantitation based on a generic response factor for this class of analyte.
IM	Inappropriate method of analysis for this compound
U	Unable to provide Quality Control data – high levels of compounds in sample interfered with analysis of QC results.
UF	Unable to provide Quality Control data- Surrogates failed QCchecks due to sample matrix effects
UI	Unable to provide Quality Control data – insufficient sample to perform QC checks.
B	This analyte also detected in analysis of the Method Blank.
D	Deviation from standard method – see notes for specific explanation.
L	Analyte detected at a level above the linear response of calibration curve.
NT	No blank sorbent tubes provided for QC analysis.
C1	These compounds co-elute.
C2	These compounds co-elute.

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APPENDIX ONE.

CHAIN OF CUSTODY DOCUMENT

Site Log Sheet and Chain of Custody
Soil Gas Sampling for VOCs

Leeder Consulting Client - COFFEY ENVIRONMENTS - SYDNEY
Project/Site- TEMPE
Sheet 1 /1

Date	Location ID	Sampler Id Number	Time (minutes)	Flow (litres/min)	Volume (litres)	Analysis Required	Comments
16/1/09	GW9 XAD2	Q585R	10.0	TOP OF FLOAT 0.5	5l	SVOCs	Moisture (reduced vol)
	GW9 (DUP) XAD2	Q586R	10.0	0.5	5l	SVOCs	
	GW9 Carbon	Q587R	5.0	0.10	0.5l	VOCs	Hold
	GW9 TO17	Y44767	5.0	0.10	0.5l	VOCs	
	GW9 TO17	M1101249	5.0	0.10	0.5l	VOCs	
	GW9 TO17	Y48356	6.0	0.10	0.6l	VOCs	
	GW9 TO17	M1101176	3.0	0.10	0.3l	VOCs	
	GW9 TO17	M1101125	1.0	0.10	0.10	VOCs	
	TRIP BLANKS TO17	M1101128	M1094133	—	—	VOCs	
	GW11 XAD2	Q588R	5.0	0.5	2.5l	SVOCs	
	GW11 XAD2	Q589R	10.0	0.5	5l	SVOCs	
	GW11 Carbon	Q590R	5.0	0.10	0.5l	VOCs	Hold
	GW11 TO17	Y41568	5.0	0.10	0.5	VOCs	
	GW11 TO17	Y44231	6.0	0.10	0.6	VOCs	
	GW11 TO17	M1101206	1.0	0.10	0.10	VOCs	
	TRIP BLANK XAD2	Q591R	—	—	—	—	
	TRIP BLANK CARBON	Q592R	—	—	—	—	Hold

Sampled by: Bill Stavropoulos

Please report to Bill Stav / 5 day turnaround

Relinquised by: (print name) Bill Stavropoulos	Received by: (print name) Lyndall Stevens
Signature : B Stavropoulos	Signature :
Date: 16-1-09 Time: 5.00pm	Date: 19/1/09 Time: 10:09am

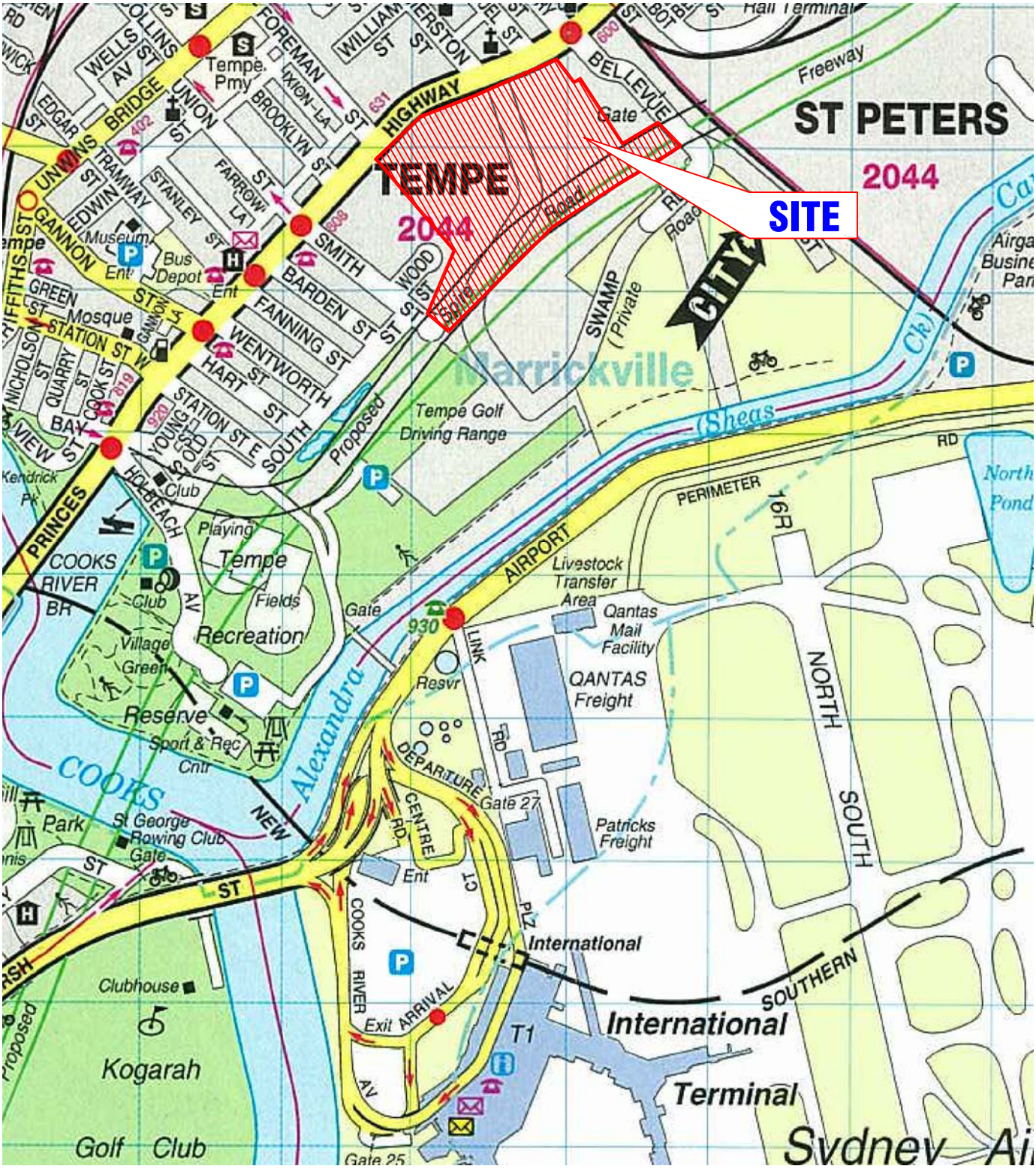
Site Log Sheet and Chain of Custody
Soil Gas Sampling for VOCs

Leeder Consulting Client - COFFEY ENVIRONMENTS - SYDNEY
Project/Site- TEMPE BEN SMITH Sheet 1 / 1

Date	Location ID	Sampler Id Number	Time (minutes)	Flow (litres/min)	Volume (litres)	Analysis Required	Comments
16/1/09	GW9 TEFLON BAG	GW9				SULPHUR	
	GW9 Dup ↓	GW9 Dup				GASES	
	GW11 ↓	GW11				" "	
	GW9 TEDLAR	GW9				GENERAL	
	GW9 Dup BAG	GW9 Dup				GASES	
↓	GW11 ↓	GW11				↓	

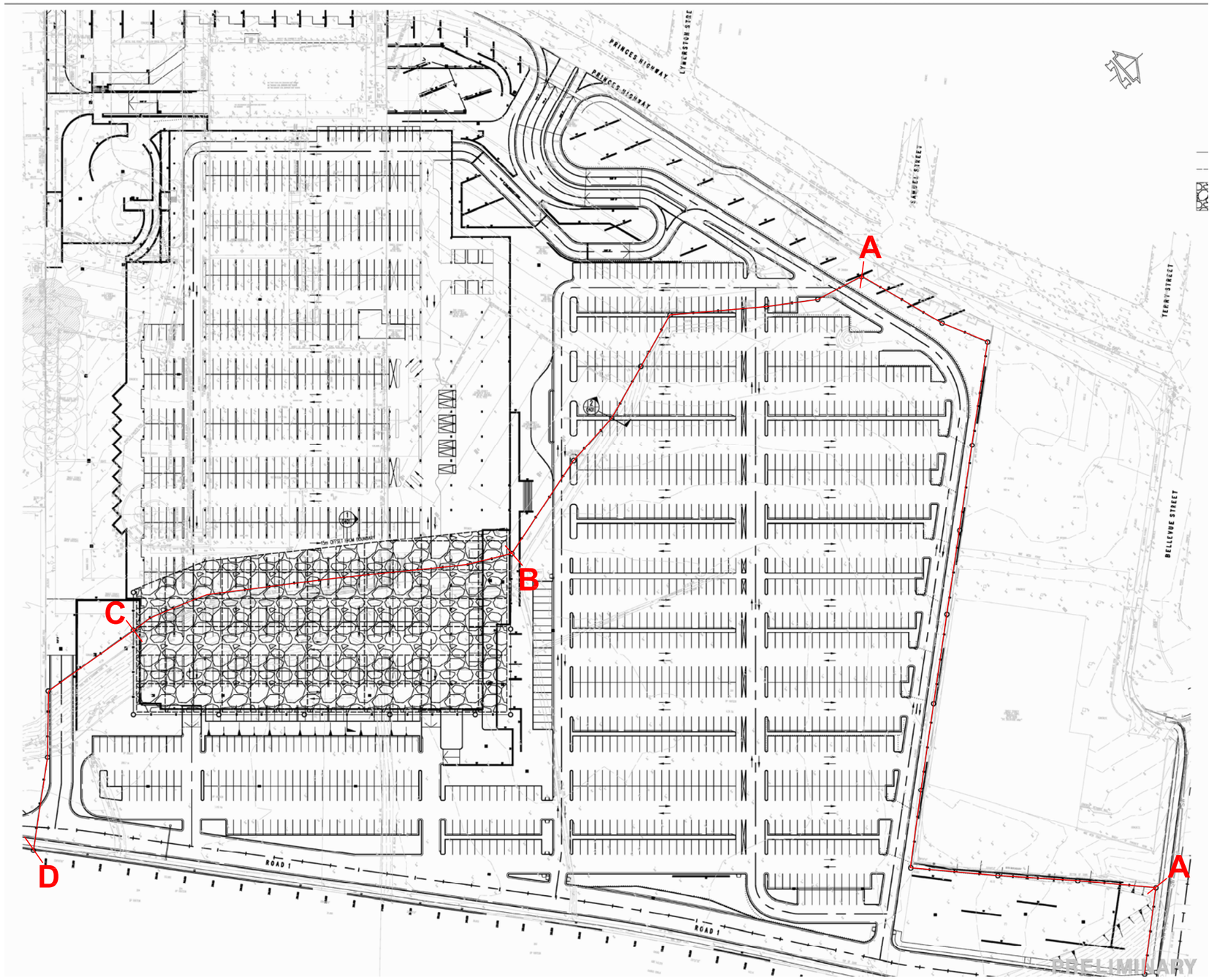
Sampled by: B Harrington

Relinquised by: (print name) B Harrington	Received by: (print name) Lyndall Stevens
Signature : B Harrington	Signature :
Date: 16/1/09 Time: 5:00pm.	Date: 19/1/09 Time: AM



SOURCE: SYDNEY AND BLUE MOUNTAINS STREET DIRECTORY
NEW SOUTH WALES
44TH EDITION, 2008, MAP: 275

drawn	MV	coffey environments SPECIALISTS IN LIVING AND WORKING PLACES	client: VALAD PROPERTY GROUP LTD	
approved			project: GAS ASSESSMENT - TEMPE LANDFILL	
date	04/02/09		title: SITE LOCATION PLAN	
scale	1:20 000		project no: ENVILCOV00315AH	figure no: FIGURE 1
original size	A4			



LEGEND

GAS MITIGATION TRENCH

revision	description	drawn	approved	date

NOT TO SCALE

drawn	MV
approved	
date	04/01/09
scale	AS SHOWN
original size	A3

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

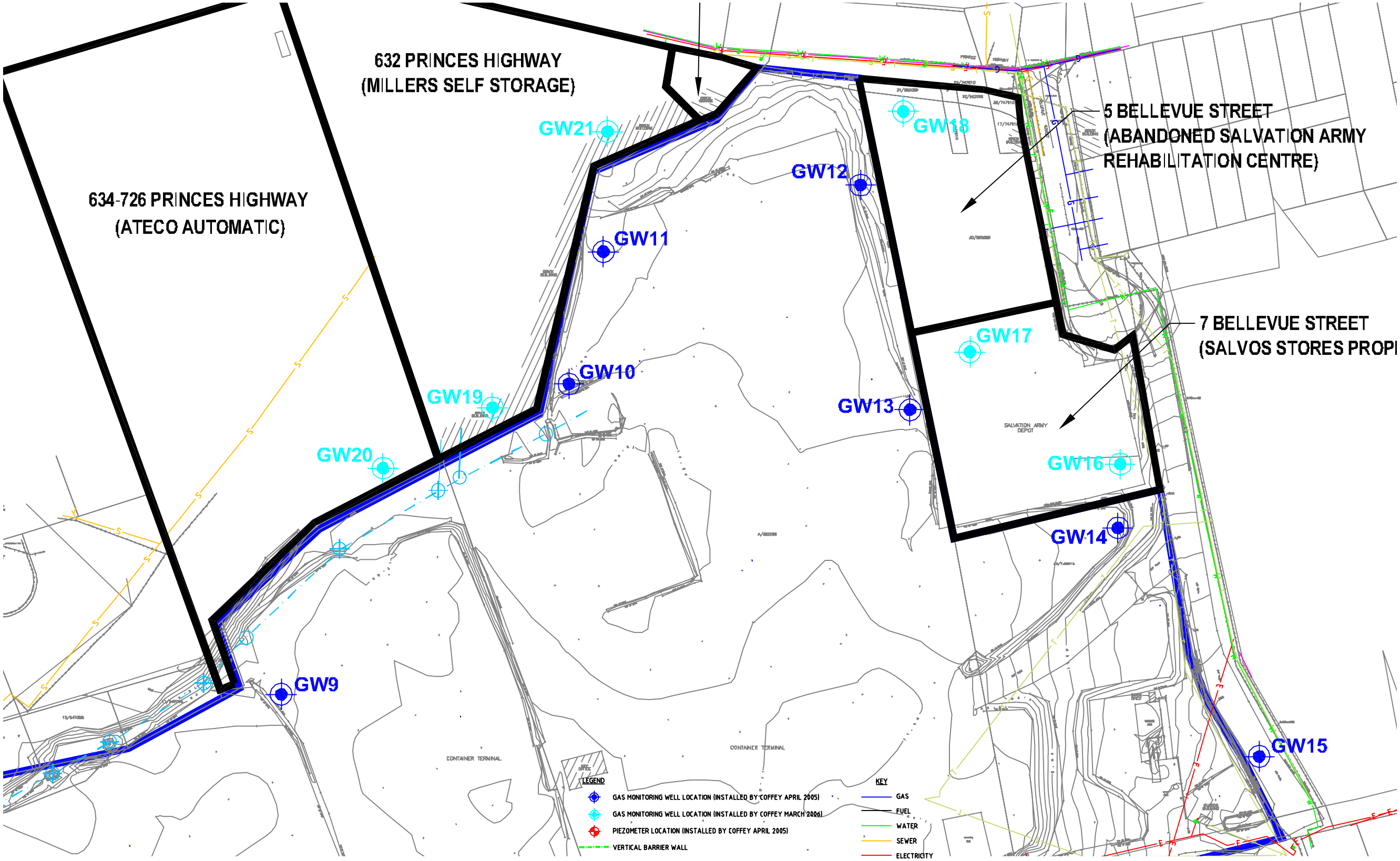
client: VALAD PROPERTY GROUP LTD

project: GAS ASSESSMENT - TEMPE LANDFILL

title: GAS MITIGATION ALONG BOUNDARY PLAN

project no: ENVILOV00315AH

figure no: FIGURE 2



revision	description	drawn	approved	date

drawn	JN/SW
approved	
date	04/01/09
scale	NOT TO SCALE
original size	A3

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

client: VALAD PROPERTY GROUP LTD

project: GAS ASSESSMENT - TEMPE LANDFILL

title: SITE PLAN SHOWING LOCATION OF GAS MONITORING WELLS

project no: ENVILCOV00315AH

figure no: FIGURE 3